Monitoring Event 13 – November 1998
Sites 1 and 3 and Eastern Plume,
Naval Air Station, Brunswick, Maine

Volume 1 of 2
Text through Appendix B

Contract No. N62472-92-D-1296
Contract Task Order No. 0047

Prepared for

Department of the Navy
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway
Mail Stop No. 82
Lester, Pennsylvania 19113-2090

Prepared by

EA Engineering, Science, and Technology
The Maple Building
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Newburgh, New York 12550

March 1999
296.0047

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MARCH 16 1999
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March 15 1999
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March 1999

QUALITY REVIEW STATEMENT

Contract No. N62472-92-D-1296 EA Project No.: 29600.47.7593
Contract Task Order No. 0047
Activity: Naval Air Station, Brunswick, Maine

Description of Report/Deliverable:

Monitoring Event 13 – November 1998, Sites 1 and 3 and Eastern Plume, Naval Air Station, Brunswick, Maine

EA CTO Manager: Peter L. Nimmer, P.G.

In compliance with EA's Quality Procedures for review of deliverables outlined in the Quality Management Plan, this final deliverable has been reviewed for quality by the undersigned Senior Technical Reviewer(s). The information presented in this report/deliverable has been prepared in accordance with the approved Implementation Plan for the Contract Task Order (CTO) and reflects a proper presentation of the data and/or the conclusions drawn and/or the analyses or design completed during the conduct of the work. This statement is based upon the standards identified in the CTO and/or the standard of care existing at the time of preparation.

Senior Technical Reviewer

James A. Shultz/mlp 3/16/99

James A. Shultz, C.P.G. (Date)
Senior Geologist

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1. PROJECT ACTIVITIES AND MONITORING EVENT RESULTS

1.1 INTRODUCTION

Under Contract No. N62472-92-D-1296, Contract Task Order No. 0047, Northern Division, Naval Facilities Engineering Command contracted with EA Engineering, Science, and Technology to perform long-term monitoring at Sites 1 and 3 and Eastern Plume at Naval Air Station (NAS), Brunswick, Maine. NAS Brunswick is located south of the Androscoggin River between Brunswick and Bath, Maine, and the locations of Sites 1 and 3 and the Eastern Plume are provided on Figure 1.

At Sites 1 and 3 and the Eastern Plume, the Navy is performing long-term monitoring, maintenance, and corrective measures as part of the long-term remedial actions required by the Record of Decision for a Remedial Action dated June 1992 for Sites 1 and 3 (ABB-ES 1992a) and the Record of Decision Interim Remedial Action dated June 1992 for the Eastern Plume (ABB-ES 1992b). A Long-Term Monitoring Plan (LTMP) was established pursuant to these Records of Decision (ABB-ES 1994). A draft revision to the LTMP has been issued (EA 1998), and is scheduled to be finalized in 1999. The Draft LTMP document establishes the monitoring and sampling requirements for Sites 1 and 3 and the Eastern Plume.

Remedial actions at Sites 1 and 3 included construction of a low permeability slurry wall upgradient and surrounding two disposal trenches to a depth of approximately 90 ft, construction of a low permeability cap atop the landfill, and placement of 2 ground-water extraction wells within the landfill limits. Extraction wells within the landfill limits (EW-6 and EW-7) were deactivated on 19 November 1997 due to continually decreasing yields and stabilized water levels within the confines of the slurry wall. The source of the Eastern Plume has been identified as Sites 4, 11, and 13 (ABB-ES 1992b). Ground water in the Eastern Plume is being remediated by a treatment system consisting of 6 ground-water extraction wells designed to provide hydraulic control of the aquifer, and a treatment plant to remove volatile organic compounds (VOC) from the ground water prior to discharge. The extraction system has been operational since April 1995. Extraction well EW-2A, located within the Eastern Plume in the vicinity of monitoring well MW-311, was activated on 12 June 1998 to provide additional hydraulic control in this area.

During completion of the Draft LTMP (EA 1998) for Sites 1 and 3 and the Eastern Plume, reported concentrations were reviewed from previous monitoring events. With the concurrence of Maine Department of Environmental Protection, U.S. Environmental Protection Agency (EPA), and Restoration Advisory Board members, the sampling points have been revised. At Sites 1 and 3, 14 monitoring wells inside the confines of the landfill slurry wall and cap are no longer sampled. One new shallow monitoring well (MW-240) was added to the sampling program effective November 1998. Gauging will continue for wells inside the landfill under the Draft LTMP. Figure 2 shows the gauging and sampling points of the long-term monitoring network; Figure 3 shows long-term monitoring locations where gauging is conducted; and

Figure 4 shows points where long-term monitoring samples are collected, as specified in the Draft LTMP (EA 1998). The sampling and gauging points at Sites 1 and 3 and the Eastern Plume are summarized in Tables 1 and 2, respectively.

Beginning with Monitoring Event 13, changes were made to the long-term monitoring network. One leachate sample location (SEEP-2) has been consistently dry and, therefore, was dropped from the sampling program. This seep location will continue to be checked and will be sampled if flowing, however, this sampling location has not been formally retained in the Long-Term Monitoring Program. Three surface water samples in the vicinity of the landfill (SW-01 through SW-03) and two surface water locations (SW-05 and SW-06) downstream were removed, and two locations further downstream were added (SW-08 and SW-09) to monitor for VOC in surface water. Two surface water locations were added upstream of the Sites 1 and 3 landfill for inorganic analysis only (SW-15 and SW-16) to monitor for upstream inorganic concentrations. These samples are currently sampled under another program, and will be sampled as part of the LTMP if they are no longer sampled as part of the currently established program. Stream sediment sampling was reduced, and will be conducted at a semi-annual frequency to be specified in the Final LTMP. Additional stream samples may be included in future monitoring events to address nearby Site 2, located across Mere Brook from Sites 1 and 3 (Figure 2).

Within the Eastern Plume, several shallow and deep monitoring wells exhibited consistent non-detections of VOC since 1995, and will no longer be sampled under the Long-Term Monitoring Program. Five additional monitoring wells (MW-330 through MW-334) were installed and added to the monitoring program effective November 1998, including 1 new shallow monitoring well (MW-332) installed near MW-311, 2 deep wells (MW-330 and MW-331) installed to investigate the connection between the northern and southern lobes of the Eastern Plume, and 2 deep wells installed as additional sentinel wells on the NAS Brunswick property south of Mere Brook (MW-333 and MW-334).

Piezometers P-111 and P-132 were sampled as part of Monitoring Event 13 to increase data coverage, based on the Draft LTMP.

Five surface water samples were added to the Long-Term Monitoring Program to assess whether the Eastern Plume is impacting surface water. Three surface water sampling locations were added to Mere Brook (SW-10, SW-11, and SW-12). Two surface water sampling locations were added to Merriconeag Stream (SW-13 and SW-14).

Although not required by the Draft LTMP, concurrent with Monitoring Event 13, a direct-push sampling program was completed in the vicinity of MW-311 to further define ground-water impacts in this area. Seven direct-push locations were sampled for ground water (DP-EP-01 through DP-EP-07). Complete results of the direct-push sampling and details regarding newly installed monitoring wells in Sites 1 and 3 and the Eastern Plume are summarized in a separate letter report (EA 1999). Sampling and gauging at Sites 1 and 3 and the Eastern Plume will be reduced from tri-annual sampling to bi-annual sampling beginning with Monitoring Event 14 (April 1999).

This report provides the results for the November 1998 monitoring/sampling event (Monitoring Event 13). Appendix A provides field monitoring and sampling forms, Appendix B provides an analytical data quality review, and Appendix C provides analytical report data tables.

Bi-monthly water level gauging data collected during September 1998 are also presented in this report. Temporal trends and other observations based on data collected during long-term monitoring will be presented in the Annual Report for 1998.

1.2 MEASUREMENT OF WATER LEVEL ELEVATIONS

1.2.1 Field Activities

Water level measurements were obtained during Monitoring Event 13 on 3 November 1998 at the wells, piezometers, and surface water gauging locations indicated in Tables 1 and 2 for Sites 1 and 3 and Eastern Plume, respectively. Although not required by the Draft LTMP, bi-monthly water level data were collected on 1 September 1998 from Sites 1 and 3 and Eastern Plume monitoring wells, piezometers, and extraction wells. These additional bi-monthly water level data were collected to identify seasonality or significant variation in ground-water flow direction with time.

Figure 3 provides the locations of ground-water monitoring wells, piezometers, extraction wells, surface water gauging stations, and other sampling points at Sites 1 and 3 and Eastern Plume. Sampling and gauging procedures are detailed in the final report for Monitoring Event 4 (EA 1996) and in the Draft LTMP (EA 1998).

A total of 0.31 in. of precipitation was noted 1 week before and during the September 1998 gauging period, and 0.66 in. of precipitation was noted 1 week before or during the November gauging period.

1.2.2 Results

Calculated ground-water elevation data are provided in Tables 3 and 4 for Sites 1 and 3 and the Eastern Plume, respectively. Daily pumping rates for each extraction well for the period 1 August through 30 November 1998 are provided in Table 5. During the well gauging conducted as part of Monitoring Event 13, the following exceptions to the Draft LTMP were noted:

- Water level measurements could not be obtained in the following dry wells or piezometers: MW-202B, P-110, and P-124.

- One offsite piezometer (P-123) had a blocked casing and could not be gauged. Attempts to clear this piezometer have been unsuccessful.

- One Sites 1 and 3 well (MW-240) and 5 Eastern Plume wells (MW-330 through MW-334) were installed October 1998. These wells were gauged starting in November 1998.

Shallow and deep potentiometric surface contour maps were prepared based on the water level data collected on 1 September and 3 November 1998. The shallow potentiometric surface contour maps contain data for wells and piezometers screened in the upper stratified silt/sand unit, while the deep potentiometric surface contour maps contain data for wells and piezometers screened in the lower coarse sand unit. The shallow interval is unconfined, while the deep interval is considered semi-confined due to the presence of the transition unit above and the Presumscot Clay formation below. The distinction between shallow and deep potentiometric surfaces was made to reflect differences in potentiometric head observed at depth in wells located across Sites 1 and 3 and the Eastern Plume, and to assess differing flow patterns which may be present in shallow and deep intervals. The interpreted ground-water flow direction for the 1 September and 3 November 1998 gauging events is shown on Figures 5 through 7, respectively, for the shallow portions of the aquifer, and Figures 8 through 11 for the deep portions of the aquifer.

Note that wells MW-210A, MW-210R, and MW-211A, located at Sites 1 and 3, are screened in bedrock at significantly lower depths than deep overburden wells. Consistent with previous monitoring events, the measured water elevations at these bedrock wells showed differing water elevations compared to nearby wells screened in the deep overburden and, therefore, the data for these bedrock wells were not used in the development of overburden potentiometric surface contour maps.

At Sites 1 and 3, a comparison of water elevation data collected during long-term monitoring indicates water elevations have decreased in the vicinity of the slurry wall due to active pumping and placement of the slurry wall and landfill cap (Figure 12). The deepest known elevation of the bottom of waste material at Sites 1 and 3 has been reported to be 32.9 ft mean sea level, as noted at well MW-234R. The depth of ground water during September and November 1998 at monitoring well MW-234R was 33.35 and 33.25 ft mean sea level, which is approximately 0.4 ft below the top of the waste material.

Observations regarding well conditions were made during the well gauging program, and notable observations at the Sites 1 and 3 include: repairs required at monitoring well MW-217A (separated extension approximately 10 ft below the top of casing) and monitoring well MW-217B (pump cord shortened). At the Eastern Plume, two artesian wells (MW-207A and MW-309A) and one monitoring well (MW-309A) require new outer steel casing. These well repairs are not expected to affect water level gauging or ground-water sample results. Repairs have been scheduled to occur during Spring 1999. The monitoring locations are secured with locks and monitoring points are labeled.

1.3 GROUND-WATER MONITORING, SAMPLING, AND ANALYSIS

1.3.1 Field Activities

The ground-water sampling program was performed during the period of 4 and 9-12 November 1998 at Sites 1 and 3 and Eastern Plume. Dedicated Grundfos Redi-Flo2 stainless steel and Teflon® submersible pumping systems were utilized at a majority of the wells to permit sampling using the low flow sampling technique with the exception of 5 wells/piezometers located in the Eastern Plume which were sampled using a peristaltic pump (MW-105A, MW-330, MW-333, P-106, and P-111).

Ground-water samples were collected from the 8 monitoring wells specified in the Draft LTMP for Sites 1 and 3 (EA 1998). At the Eastern Plume site, ground-water samples were collected from 28 of 28 wells and piezometers, and 5 of 6 extraction wells specified in the Draft LTMP. Extraction well EW-4 was offline for maintenance, and it was not sampled as part of Monitoring Event 13.

Tables 1 and 2 provide summaries of the wells/piezometers gauged and sampled as part of the long-term monitoring program. A detailed description of sample collection methods is provided in the final report for Monitoring Event 4 (EA 1996).

1.3.2 Water Quality Indicator Parameter Measurements

Water quality indicator parameters, including pH, conductivity, temperature, dissolved oxygen, and turbidity, were monitored to ensure stabilization of water quality prior to sample collection. Stabilization of water quality indicator parameters was considered achieved when measurements agreed to within 10 percent on three successive readings and turbidity was below 10 nephelometric turbidity units (NTU). Although not required by the Draft LTMP, oxidation-reduction potential (Eh) was recorded for informational purposes to assess geochemical conditions.

At Sites 1 and 3, 7 of 8 monitoring wells reached equilibrium of the water quality indicator parameters during well purging. Monitoring well MW-217B had 2 water quality parameters (dissolved oxygen and turbidity) which did not stabilize to within 10 percent on three successive readings. This is consistent with past sampling events. Four wells had turbidity in excess of 10 NTU, however, it should be noted at well MW-202A that there was a malfunction with the turbidity probe on the YSI water quality meter. Water was visibly clear at the time of sampling, although high turbidity was recorded. The turbidity probe was replaced and there were no further equipment problems. These elevated turbidity measurements are not likely to impact sample quality.

At the Eastern Plume site, 27 of 28 wells/piezometers reached equilibrium of the water quality indicator parameters during well purging. Piezometer P-111 was reported to have minimal water present in the well, and only one set of water quality parameters could be recorded. Five of the

28 wells/piezometers sampled reached equilibrium but had turbidity measurements in excess of 10 NTU. These elevated turbidity measurements are not expected to impact sample quality.

1.3.3 Water Quality Results

Results of water quality indicator parameter monitoring at the time samples were collected are summarized in Tables 6 and 7 for ground-water samples collected at Sites 1 and 3 and the Eastern Plume, respectively. Tables 8 and 9 provide a summary of the water quality indicator parameter measurements taken in surface water and seep samples collected at Sites 1 and 3 and Eastern Plume, respectively. Water quality indicator parameters measured in water samples collected from extraction wells and treatment plant combined influent and treated effluent samples are summarized in Table 10. The Field Record of Well Gauging, Purging, and Sampling forms, and Field Record of Surface Water/Sediment Sampling forms are provided in Appendix A.

Notable results of water quality indicator parameter measurements are described below for informational purposes, although sample data quality is not expected to be adversely impacted.

1.3.3.1 Sites 1 and 3

- Three of 8 wells reported turbidity in excess of 10 NTU (MW-217B [211 NTU], MW-218 [18 NTU], and MW-219 [39 NTU]).

- An elevated level of conductivity was measured at MW-217B compared to other wells at Sites 1 and 3. This well is located within the Sites 1 and 3 landfill, and elevated conductivity results are consistent with previous sampling of this well.

- Elevated dissolved oxygen concentrations approaching saturation (>9.0 mg/L) were noted in 2 wells at Sites 1 and 3: MW-204 (11.08 mg/L) and MW-240 (9.50 mg/L).

- Reduced dissolved oxygen concentrations (<2.0 mg/L) were noted in 3 monitoring wells at Sites 1 and 3 (MW-202A [1.93 mg/L], MW-217B [1.98 mg/L], and MW-218 [0.88 mg/L]).

- Monitoring well MW-217B had two water quality parameters (turbidity and dissolved oxygen) which did not stabilize to within 10 percent on three successive readings.

1.3.3.2 Eastern Plume

- Turbidity values below 10 NTU were recorded at 20 of 28 monitoring wells and piezometers sampled. Turbidity values stabilized at other locations prior to sample collection, with the exception of P-111 which contained minimal water.

- Elevated dissolved oxygen concentrations approaching saturation (>9.0 mg/L) were noted in 6 wells at the Eastern Plume: MW-105A (11.27 mg/L), MW-224 (11.19 mg/L), MW-231A (9.62 mg/L), MW-231B (10.91 mg/L), MW-306 (10.50 mg/L), and P-132 (10.79 mg/L). All but 2 of these wells (MW-105A and MW-224) are screened within the unconfined upper stratified sand/silt transition unit; all of the wells are located along the western or southern boundaries of the Eastern Plume.

- Reduced dissolved oxygen concentrations (<2.0 mg/L) were noted in 11 monitoring wells).

1.3.3.3 Surface Water and Leachate Seeps

Notable results of water quality indicator parameters include:

- Dissolved oxygen concentrations approaching saturation (>9.0 mg/L) were noted in surface water samples collected at Sites 1 and 3 and Eastern Plume.

- One leachate seep (SEEP-02) was dry, therefore, water quality parameters could not be measured.

- Surface water samples from SW-15 and SW-16 were collected under a separate program. Water quality parameters were not measured.

1.3.3.4 Ground-Water Extraction and Treatment System

Notable results of water quality indicator parameters measured include:

- Elevated dissolved oxygen concentrations were recorded in the combined effluent, which is likely attributable to aeration and mixing, and the addition of hydrogen peroxide in the ultraviolet/peroxidation system, located immediately upstream of the effluent sample port.

- Elevated turbidity was reported at extraction well EW-3. It has been determined that EW-3 has formation material entering the well through the well screen and screen integrity will be assessed in 1999. This well will remain offline or will be repaired.

1.3.4 Ground-Water Analytical Program

Ground-water samples collected from Sites 1 and 3 and the Eastern Plume were submitted for analysis of Target Compound List (TCL) VOC by EPA Method 8260. Ground-water samples collected from Sites 1 and 3 were further analyzed for Target Analyte List (TAL) elements, including metals by inductively coupled plasma (EPA Method 6010), graphite furnace (EPA Method 7000 Series), and mercury by cold vapor atomic adsorption (EPA Method 7470).

Chromium was analyzed by inductively coupled plasma (EPA Method 6010) as specified in the Draft LTMP; the precision and accuracy objectives and reporting requirements identified in the Draft LTMP were met.

1.3.5 Ground-Water Sampling Results

1.3.5.1 Sites 1 and 3

Table 11 provides a summary of the analytical results for the ground-water samples collected at Sites 1 and 3. Summary tables (Form I documents) for the analyses performed are provided in Appendix C.

1.3.5.2 Eastern Plume

Table 12 summarizes the analytical results for the ground-water samples collected at the Eastern Plume. The summary tables (Form Is) for these analyses are provided in Appendix C.

A direct-push sampling program was conducted during Monitoring Event 13. Analytical results are summarized in Table 13. Notable results of the ground-water sampling program include the following:

- There were no VOC reported above State MEG or Federal MCL in 5 ground-water samples collected from the sample stations DP-EP-01 through DP-EP-04. These stations are located south of MW-311 near newly installed sentinel wells MW-333 and MW-334.

- Concentrations of VOC were reported above the State MEG or Federal MCL in ground-water samples collected from 3 direct-push sample stations (DP-EP-05 through DP-EP-07) located in the vicinity of MW-311. The VOC concentrations were reported in samples collected from the deep coarse-grained sand strata within which MW-311 is screened.

- One VOC, methylene chloride, was reported in the ground-water samples and the associated rinsate blank. Methylene chloride is inferred to be a laboratory artifact and is considered to be a false-positive.

1.3.5.3 Total Volatile Organic Compound Isoconcentration Maps

A review of total VOC concentration isocontours for wells screened in the unconfined shallow interval (upper transition unit) at Sites 1 and 3 and the Eastern Plume (Figure 13) indicates that VOC concentrations above corresponding State MEG and/or Federal MCL were detected in one area within the Sites 1 and 3 landfill in the vicinity of MW-217B, and in one area within Eastern Plume in the vicinity of MW-332.

A review of total VOC concentration isocontours for wells screened within the deep interval (semi-confined coarse sand unit) shown on Figure 14 indicates that two areas of the Eastern Plume reported VOC concentrations above corresponding State MEG and Federal MCL. The first area in the Eastern Plume extends from MW-NASB-212 in the northeastern portion of the Eastern Plume towards MW-308. The second area in the Eastern Plume extends from EW-3 southeast toward MW-311 and south toward MW-229A.

1.3.5.4 Perimeter Monitoring Wells

A network of perimeter monitoring wells is present near the property boundary of NAS Brunswick in the vicinity of Sites 1 and 3 and Eastern Plume. Perimeter monitoring wells at Sites 1 and 3 and the Eastern Plume include: MW-231A, MW-231B, MW-240, MW-332, MW-333, MW-334, MW-318, MW-313, MW-218, MW-309B, and MW-305. A full discussion of VOC detections at perimeter monitoring wells will be included in the 1998 Annual Report.

Notable results of perimeter well sampling include:

- The majority of overburden perimeter monitoring wells (MW-231A, MW-231B, MW-305, MW-318, and MW-334) and one perimeter bedrock well (MW-309B) reported no concentrations of VOC other than laboratory artifacts.

- One deep perimeter monitoring well at Sites 1 and 3 (MW-218) reported an elevated concentration of arsenic above Federal MCL.

- One deep perimeter monitoring well (MW-333) reported one VOC (1,1-dichloroethane) at 1 μg/L, which is below the MEG (70 μg/L; no MCL).

- One shallow perimeter monitoring well located in the southeast portion of the Eastern Plume (MW-332) reported concentrations of 2 VOC above corresponding State MEG or Federal MCL.

1.3.5.5 Ground-Water Extraction and Treatment System

Table 14 provides a summary of the VOC and target analytes reported in ground-water extraction well, treatment system influent, and treatment system combined effluent samples collected at the ground-water extraction and treatment system. Laboratory data (Form I documents) are provided in Appendix C.

There were no exceedances of the ground-water treatment plant discharge limits for VOC reported in the combined effluent sample.

1.4 SURFACE WATER AND SEEP SAMPLING AND ANALYSIS

1.4.1 Sampling Activities

The surface water, leachate seep, and leachate seep sediment samples at Sites 1 and 3 and surface water samples at Eastern Plume were collected on 5 November 1998, in accordance with the general methodologies established in the Draft LTMP (EA 1998).

Surface water, leachate station seep, and seep sediment samples were collected for analysis of TCL VOC by EPA Method 8260. Selected surface water samples at Sites 1 and 3 were additionally analyzed for TAL elements, including metals by inductively coupled plasma (EPA Method 6010), graphite furnace (EPA Method 7000 series), and mercury by cold vapor atomic adsorption (EPA Method 7470). Chromium was analyzed by inductively coupled plasma (EPA Method 6010). The precision and accuracy objectives and reporting requirements identified in the Draft LTMP were met.

1.4.2 Laboratory Results

1.4.2.1 Surface Water

Sites 1 and 3

Table 15 provides a summary of the VOC and TAL reported in surface water samples collected at Sites 1 and 3. The reports of laboratory analyses (Form I documents) for the surface water samples are provided in Appendix C.

Eastern Plume

Table 16 provides a summary of the constituents reported in surface water samples collected at the Eastern Plume. The reports of laboratory analyses (Form I documents) for surface water samples are provided in Appendix C.

1.4.2.2 Leachate Station Seep Samples

Table 17 provides a summary of the constituents reported in leachate station seep samples collected at Sites 1 and 3. The analytical reports for leachate analyses (Form Is) are provided in Appendix C.

1.4.2.3 Leachate Station Sediment Samples

Table 18 provides a summary of the constituents reported in the 5 leachate station sediment samples collected at Sites 1 and 3. Reports of laboratory analyses (Form Is) are provided in Appendix C.

1.5 LANDFILL GAS MONITORING AND CAP INSPECTION

1.5.1 Monitoring and Inspection Activities

Gas probe monitoring was conducted at Sites 1 and 3 on 24 November 1998 to monitor and identify subsurface gas migration, as specified in the Draft LTMP (EA 1998). Landfill gas monitoring procedures were performed in accordance with the Draft LTMP (EA 1998) and the final report for Monitoring Event 4 (EA 1996). Gas measurements were taken at each of the 3 gas probes (GP-04 through GP-06) located along the north and west side of the Weapons Compound and at each of the 14 gas vents (GV-01 through GV-14) located along the north and west sides of the landfill. The gas probe casings were observed to be in good repair and locked, and appeared to be in good condition. Two gas vents (GV-01 and GV-14) were observed to have been completed with plastic impact barriers, although these vents are located in areas away from potential vehicular traffic.

The engineering inspection of the landfill cap and appurtenances noted the presence of erosion, and corrective measures have been completed to repair the areas of erosion noted in previous sampling events and to prevent further erosion. Completion of necessary repairs to the landfill cap and drainage system, including the drainage along the eastern border and the western drainage swale, is scheduled to be conducted in the Spring of 1999 and will be summarized separately following completion.

1.5.2 Landfill Gas Monitoring Results

Table 19 provides a summary of landfill gas monitoring conducted at the gas probes and gas vents located at Sites 1 and 3. Sample data were noted both in field logbooks and on the field record forms provided in Appendix A.

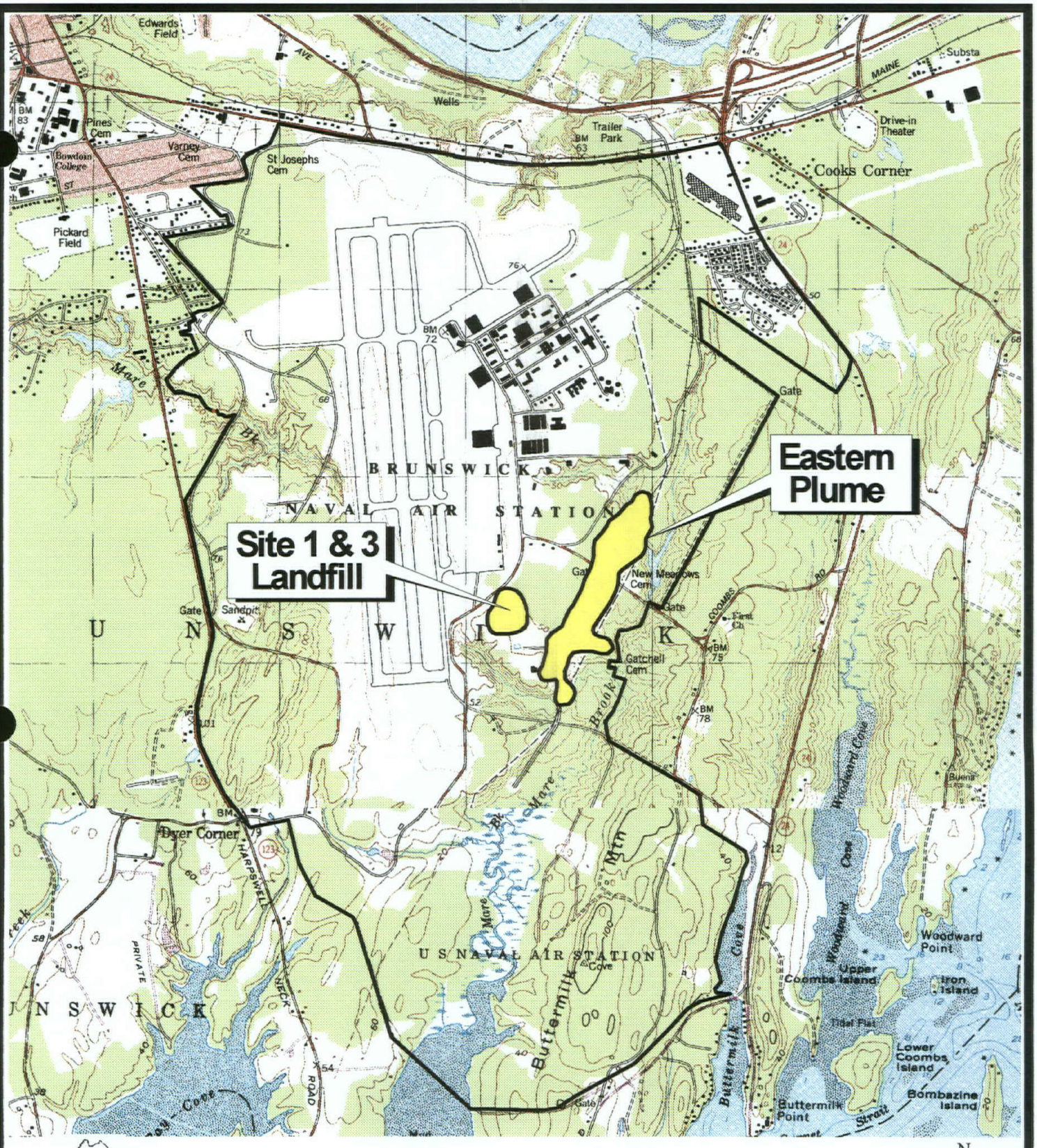
1.6 QUALITY ASSURANCE/QUALITY CONTROL

A rigorous quality assurance/quality control program is required by the Draft LTMP to meet the data quality objectives of the aqueous and sediment sampling program, as outlined in the Quality Assurance Project Plan contained in the Draft LTMP (EA 1998). The data obtained during the November 1998 sampling event were determined to be of sufficient quality to be used for the objectives specified in the Draft LTMP (EA 1998).

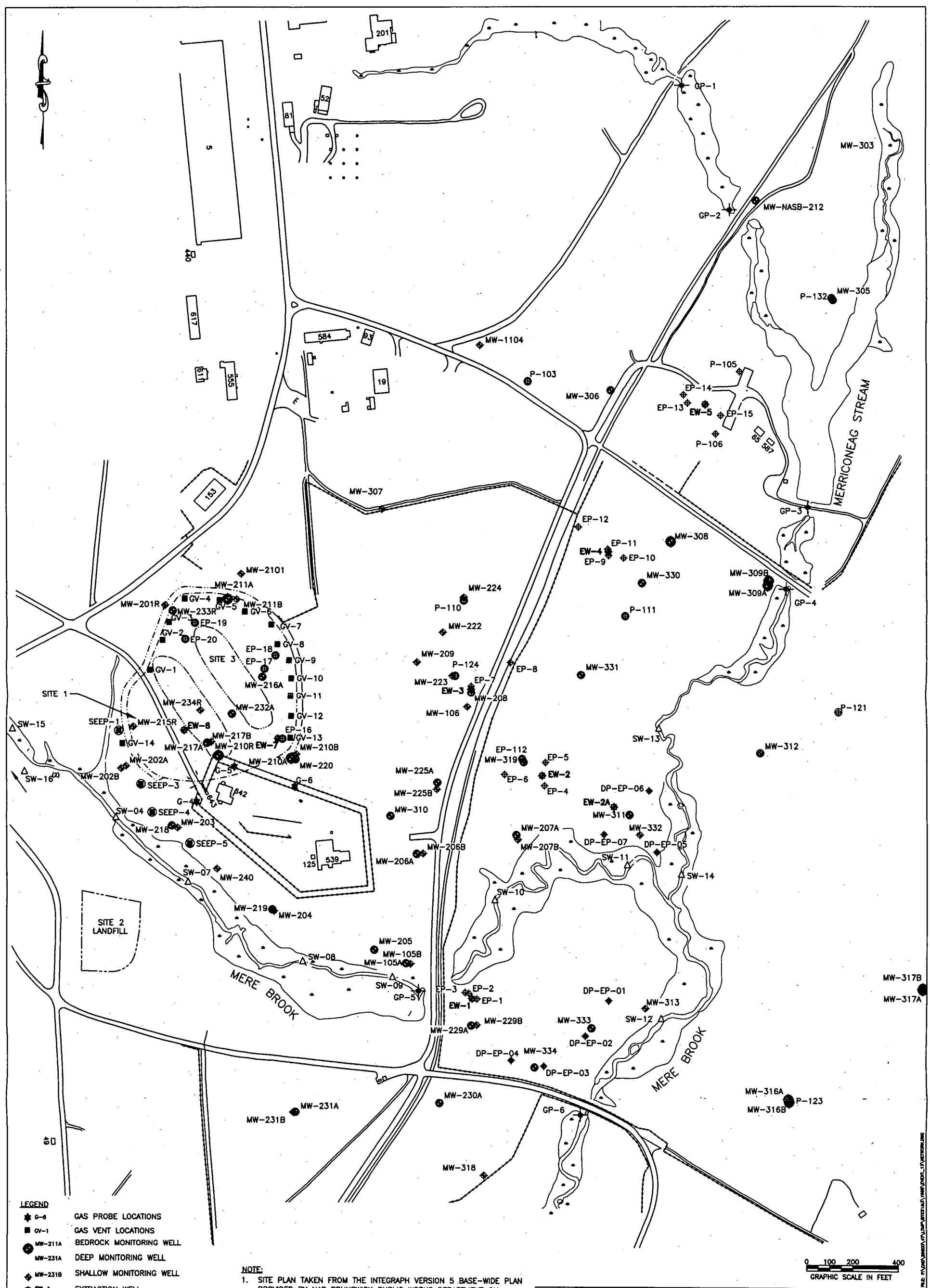
1.7 ANALYTICAL DATA QUALITY REVIEW

As required by the Draft Quality Assurance Project Plan contained in the Draft LTMP (EA 1998), a review of laboratory data was performed on selected quality control parameters to evaluate precision, accuracy, representativeness, completeness, and comparability and data quality objective requirements. A summary of the analytical data quality review for chemical data is provided in Appendix B. With consideration of the data qualifiers and notes provided

in Appendix B, the data represented in this report were found to meet specified acceptance criteria and, therefore, represent data in compliance with the Draft Quality Assurance Project Plan (EA 1998). Method detection limits for sediment and aqueous media are included in Appendix B. Notable findings of the analytical data quality review are summarized in Table 20.



EA ENGINEERING, SCIENCE, AND TECHNOLOGY	SITES 1 AND 3 AND EASTERN PLUME NAVAL AIR STATION, BRUNSWICK, MAINE				FIGURE 1 SITE LOCATION MAP		
PROJECT MGR	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	DATE	PROJECT No	FILE No
PLN	BT	BT	PLN	AS SHOWN	27 JAN 1999	29600.47	I:\NASB_GIS \NAVY.APR



LEGEND

G-6	GAS PROBE LOCATIONS
GV-1	GAS VENT LOCATIONS
MW-211A	BEDROCK MONITORING WELL
MW-231A	DEEP MONITORING WELL
MW-231B	SHALLOW MONITORING WELL
EW-1	EXTRACTION WELL
EP-11	DEEP PIEZOMETER
EP-16	SHALLOW PIEZOMETER
SEEP-1	SEEP LOCATIONS
SW-1	SURFACE WATER
DP-EP-01	DIRECT-PUSH GROUND-WATER SAMPLE LOCATION
	FENCE
	APPROXIMATE LIMITS OF SLURRY WALL
	APPROXIMATE LIMITS OF SITES 1 & 3
	APPROXIMATE LIMITS OF FORMER DISPOSAL TRENCHES
	APPROXIMATE BOUNDARY OF SITE 2 LANDFILL

NOTE:

1. SITE PLAN TAKEN FROM THE INTEGRAPH VERSION 5 BASE-WIDE PLAN PROVIDED BY NAS BRUNSWICK PUBLIC WORKS DEPARTMENT ON 13 OCTOBER 1995.
2. SW-16 LOCATED APPROXIMATELY 1,000 FT UPSTREAM OF SITES 1 AND 3.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 2

LONG-TERM MONITORING NETWORK

DATE	15 MARCH 1999
DESIGNED BY	PLN
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	CEM
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	NETWORK.DWG
DRAWING NUMBER	-
SHEET NUMBER	-

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

THE MAPLE BUILDING
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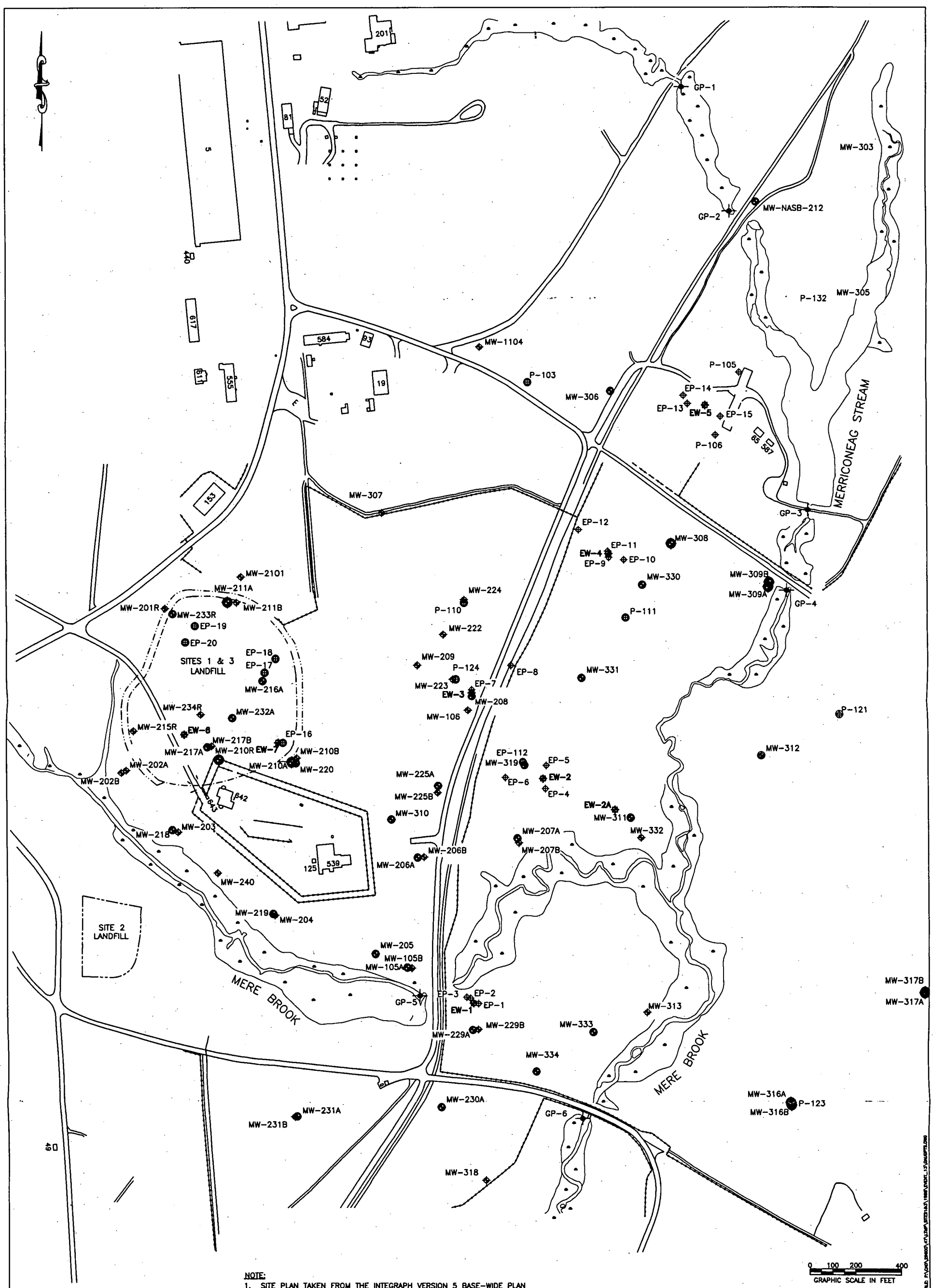
ALASKA, CALIFORNIA, COLORADO, DELAWARE, FLORIDA, GEORGIA, HAWAII, ILLINOIS, MARYLAND, MASSACHUSETTS, NEBRASKA, NEW JERSEY, NEW YORK, NORTH CAROLINA, TEXAS, WASHINGTON



NOTE:

1. SITE PLAN TAKEN FROM THE INTEGRAPH VERSION 5 BASE-WIDE PLAN PROVIDED BY NAS BRUNSWICK PUBLIC WORKS DEPARTMENT ON 13 OCTOBER 1995.

LEGEND

- MW-211A — BEDROCK MONITORING WELL
- MW-231A — DEEP MONITORING WELL
- MW-231B — SHALLOW MONITORING WELL
- EW-1 — EXTRACTION WELL
- EP-11 — DEEP PIEZOMETER
- EP-16 — SHALLOW PIEZOMETER
- FENCE
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- APPROXIMATE BOUNDARY OF SITE 2 LANDFILL

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 3

LONG-TERM MONITORING GAUGING LOCATIONS

DATE	10 JANUARY 1999
DESIGNED BY	PLN
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	CEM

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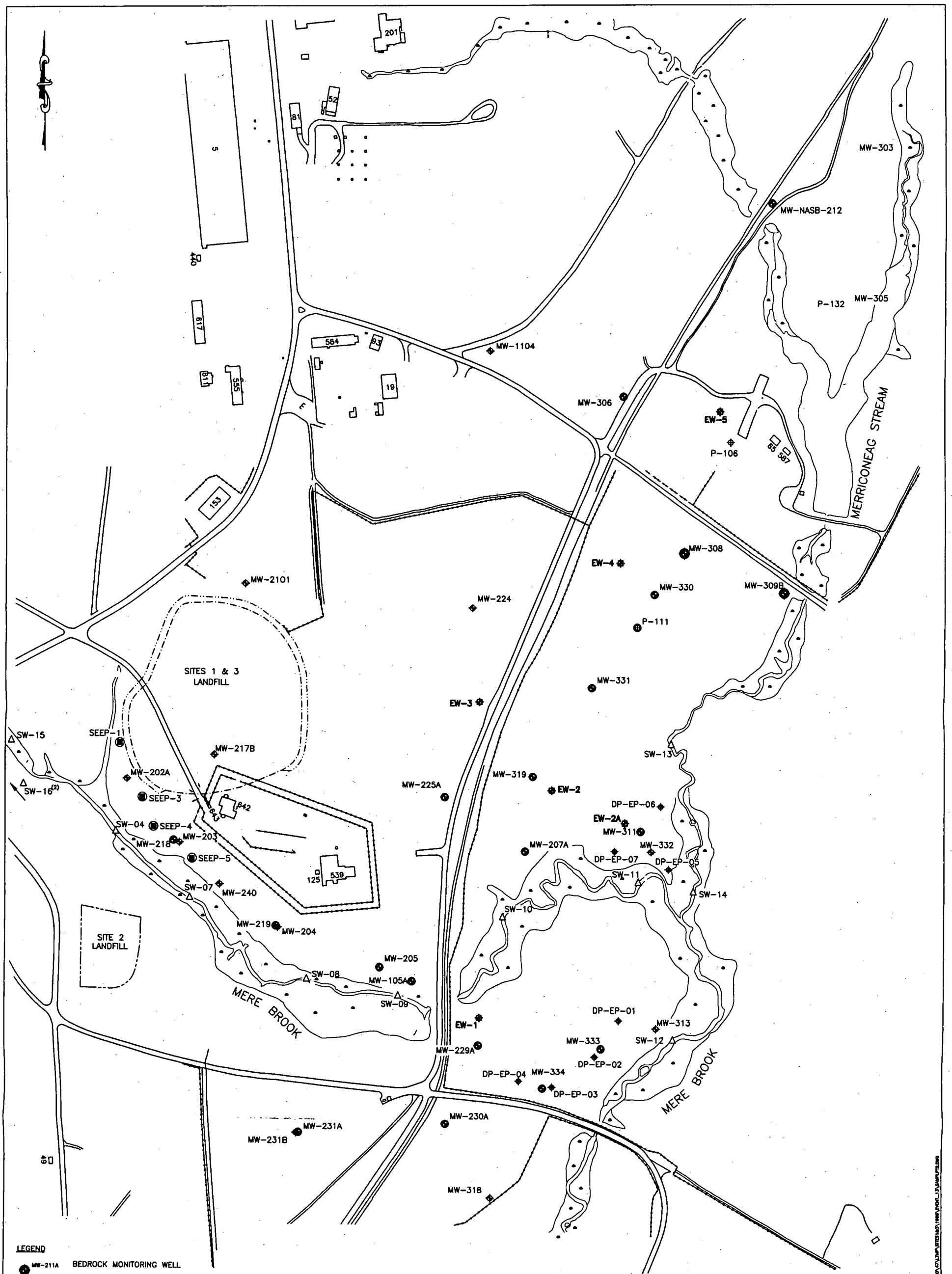
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	GAUGPTS.DWG
DRAWING NUMBER	-
SHEET NUMBER	-



LEGEND

- MW-211A — BEDROCK MONITORING WELL
- MW-231A — DEEP MONITORING WELL
- MW-231B — SHALLOW MONITORING WELL
- EW-1 — EXTRACTION WELL
- EP-11 — DEEP PIEZOMETER
- EP-16 — SHALLOW PIEZOMETER
- SEEP-1 — SEEP LOCATIONS
- SW-1 — SURFACE WATER
- DP-EP-01 — DIRECT-PUSH GROUND-WATER SAMPLE LOCATION
- FENCE
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- APPROXIMATE BOUNDARY OF SITE 2 LANDFILL

NOTE:

1. SITE PLAN TAKEN FROM THE INTEGRAPH VERSION 5 BASE-WIDE PLAN PROVIDED BY NAS BRUNSWICK PUBLIC WORKS DEPARTMENT ON 13 OCTOBER 1995.
2. SW-16 LOCATED APPROXIMATELY 1,000 FT UPSTREAM OF SITES 1 AND 3.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 4

LONG-TERM MONITORING SAMPLING POINTS

DATE	10 JANUARY 1999
DESIGNED BY	PLN
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	CEM

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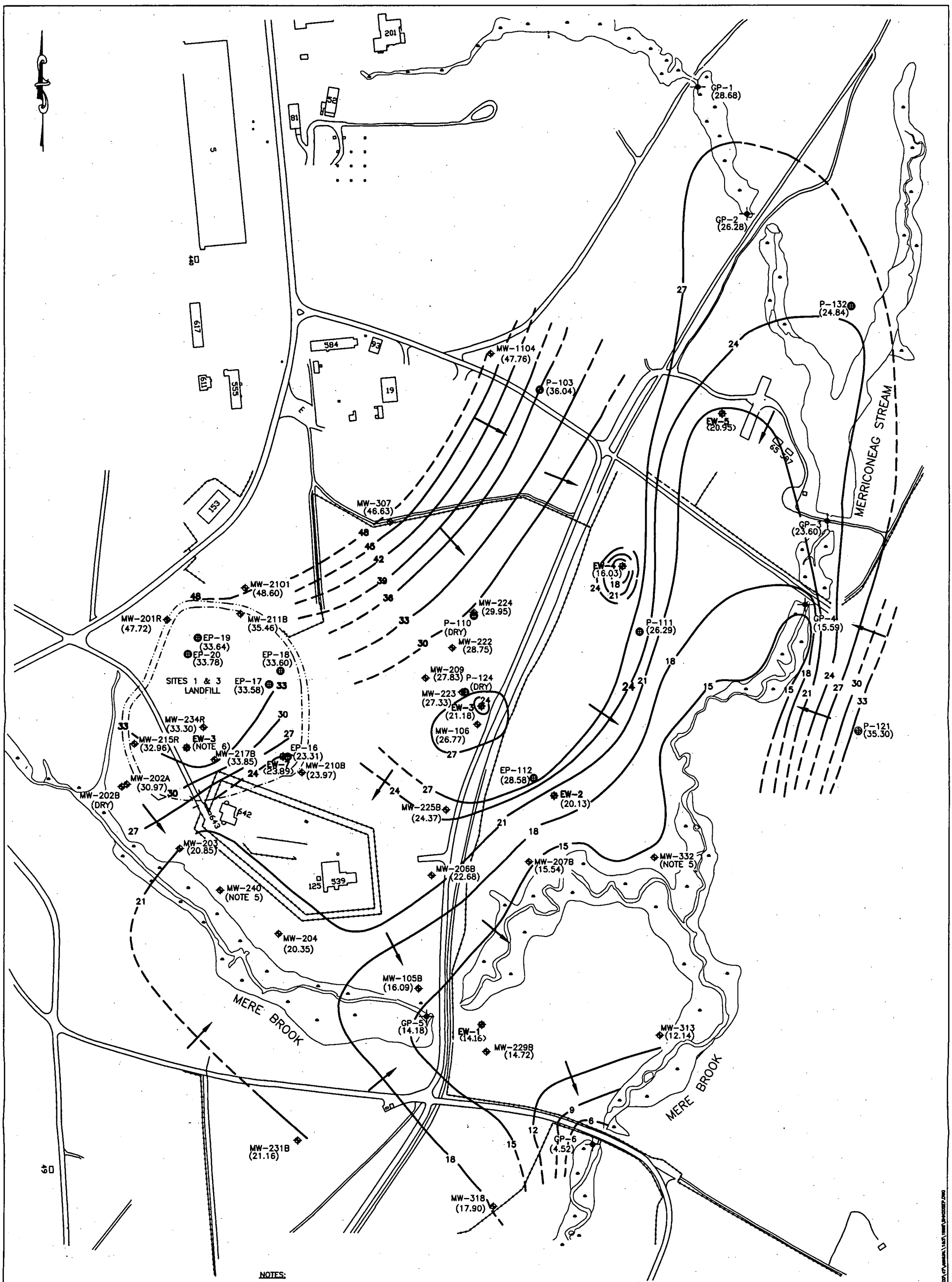
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	SAMPLPTS.DWG
DRAWING NUMBER	-
SHEET NUMBER	-



LEGEND

- MW-231B (21.16) — SHALLOW MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- EW-1 (14.16) — EXTRACTION WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- EP-16 (23.31) — SHALLOW PIEZOMETER (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- GP-6 (4.52) — SURFACE WATER GAUGING POINT (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- FENCE
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- —27— GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION

NOTES:

1. WATER LEVEL DATA COLLECTED 1 SEPTEMBER 1998. 0.31 IN. OF PRECIPITATION WAS NOTED 1 WEEK BEFORE AND DURING GAUGING PERIOD.
2. EXTRACTION WELLS EW-1, EW-2, EW-2A, EW-3, EW-4, AND EW-5 WERE IN OPERATION DURING WELL GAUGING ACTIVITY.
3. CONTOUR INTERVAL = 3 FT.
4. SITE PLAN TAKEN FROM THE INTEGRAPH VERSION 5 BASE-WIDE PLAN PROVIDE BY NAS BRUNSWICK PUBLIC WORKS DEPARTMENT ON 13 OCTOBER 1995.
5. MONITORING WELLS INSTALLED AT TIME OF GAUGING.
6. EXTRACTION WELL VAULT FLOODED. UNABLE TO OBTAIN WATER LEVEL READING.
7. CONTOURS REPRESENT EVALUATION OF PROBABLE CONDITIONS BASED ON PRESENTLY AVAILABLE DATA. SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 5
INTERPRETED SHALLOW GROUND-WATER POTENTIOMETRIC SURFACE CONTOUR MAP, 1 SEPTEMBER 1998

DATE	10 JANUARY 1999
DESIGNED BY	PLN
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	CEM

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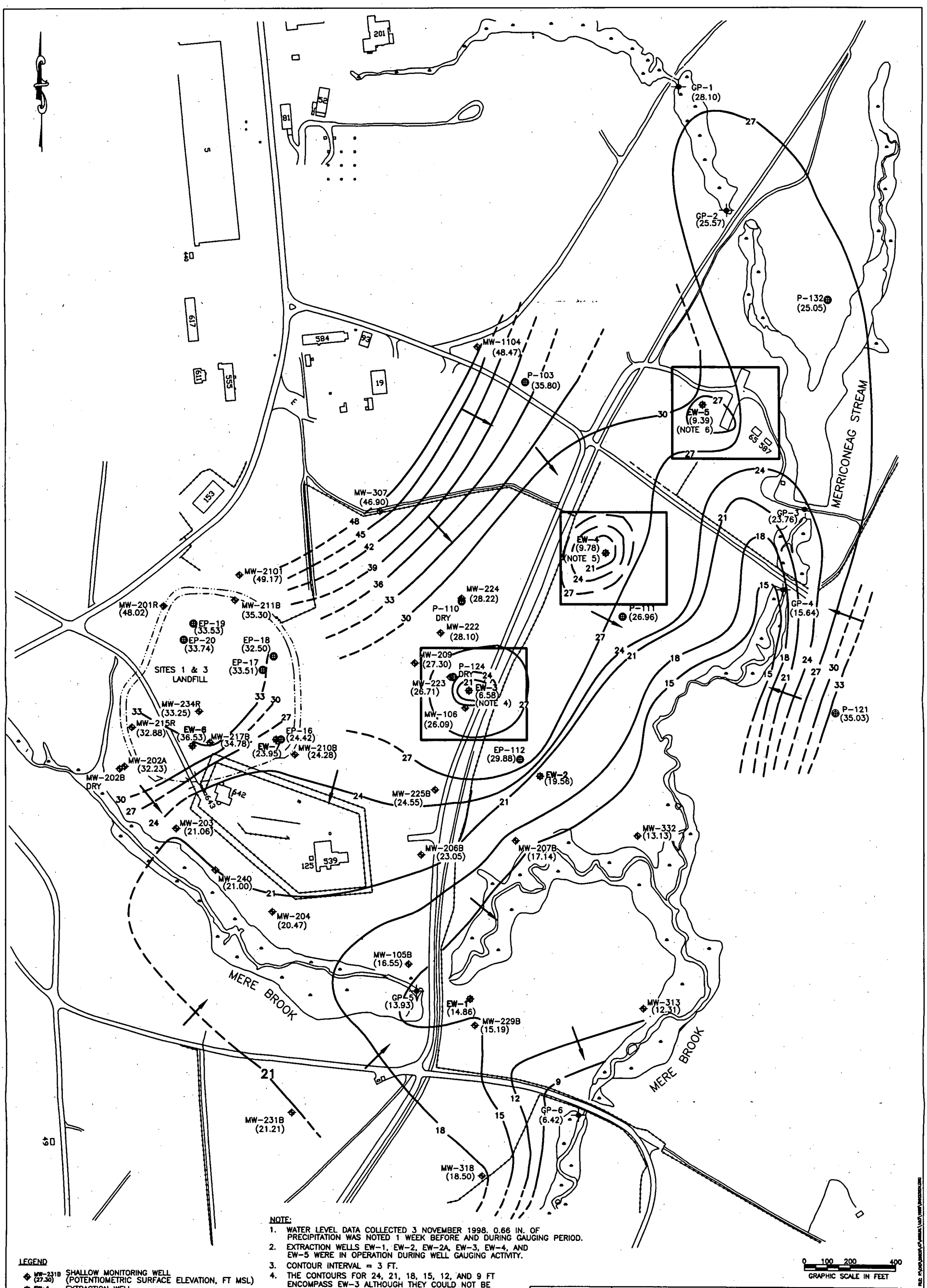
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	SHH20SEP.DWG
DRAWING NUMBER	-
SHEET NUMBER	-



NOTE:

1. WATER LEVEL DATA COLLECTED 3 NOVEMBER 1998. 0.66 IN. OF PRECIPITATION WAS NOTED 1 WEEK BEFORE AND DURING GAUGING PERIOD.
2. EXTRACTION WELLS EW-1, EW-2, EW-2A, EW-3, EW-4, AND EW-5 WERE IN OPERATION DURING WELL GAUGING ACTIVITY.
3. CONTOUR INTERVAL = 3 FT.
4. THE CONTOURS FOR 24, 21, 18, 15, 12, AND 9 FT ENCOMPASS EW-3 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 7, DETAIL A).
5. THE CONTOURS FOR 15 AND 12 FT ENCOMPASS EW-4 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 7, DETAIL B).
6. THE CONTOURS FOR 27, 24, 21, 18, 15, AND 12 FT ENCOMPASS EW-5 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 7, DETAIL C).
7. SITE PLAN TAKEN FROM THE INTEGRAPH VERSION 5 BASE-WIDE PLAN PROVIDED BY NAS BRUNSWICK PUBLIC WORKS DEPARTMENT ON 13 OCTOBER 1995.
8. CONTOURS REPRESENT EVALUATION OF PROBABLE CONDITIONS BASED ON PRESENTLY AVAILABLE DATA. SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED.

LEGEND

- MW-231B (27.30) SHALLOW MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- EW-1 (14.86) EXTRACTION WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- EP-16 (24.42) SHALLOW PIEZOMETER (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- GP-5 (13.93) SHALLOW PIEZOMETER (SURFACE WATER ELEVATION, FT MSL)
- FENCE
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- 27 GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION
- BOXED AREAS ARE DETAILED ON FIGURE 7

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 6
INTERPRETED SHALLOW GROUND-WATER POTENTIOMETRIC SURFACE CONTOUR MAP, 3 NOVEMBER 1998

DATE	10 JANUARY 1999
DESIGNED BY	PLN
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	CEM

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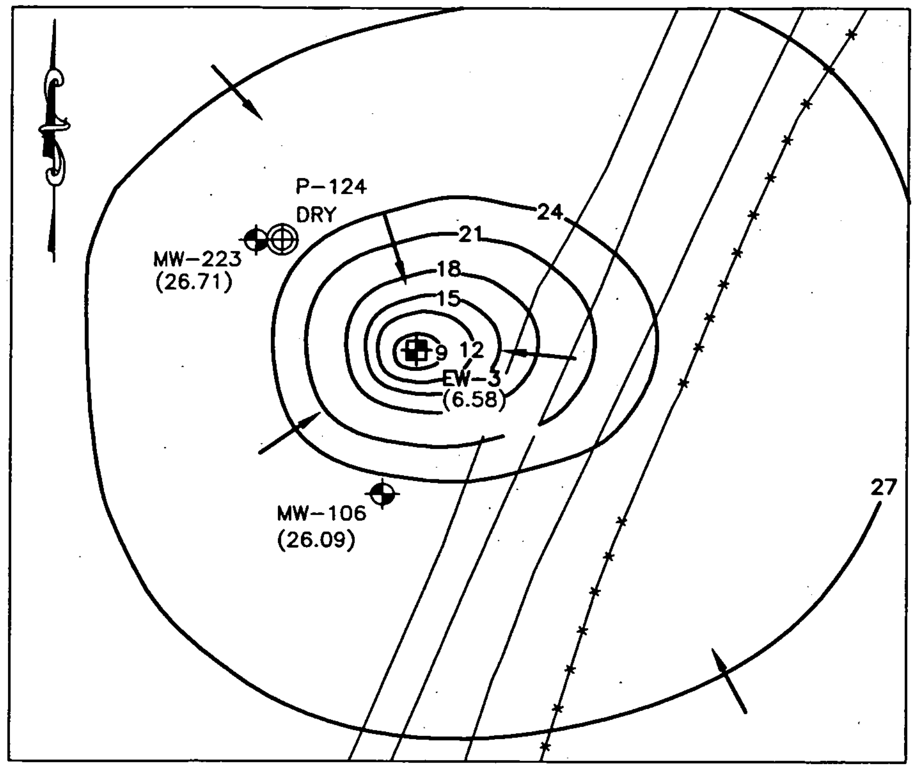
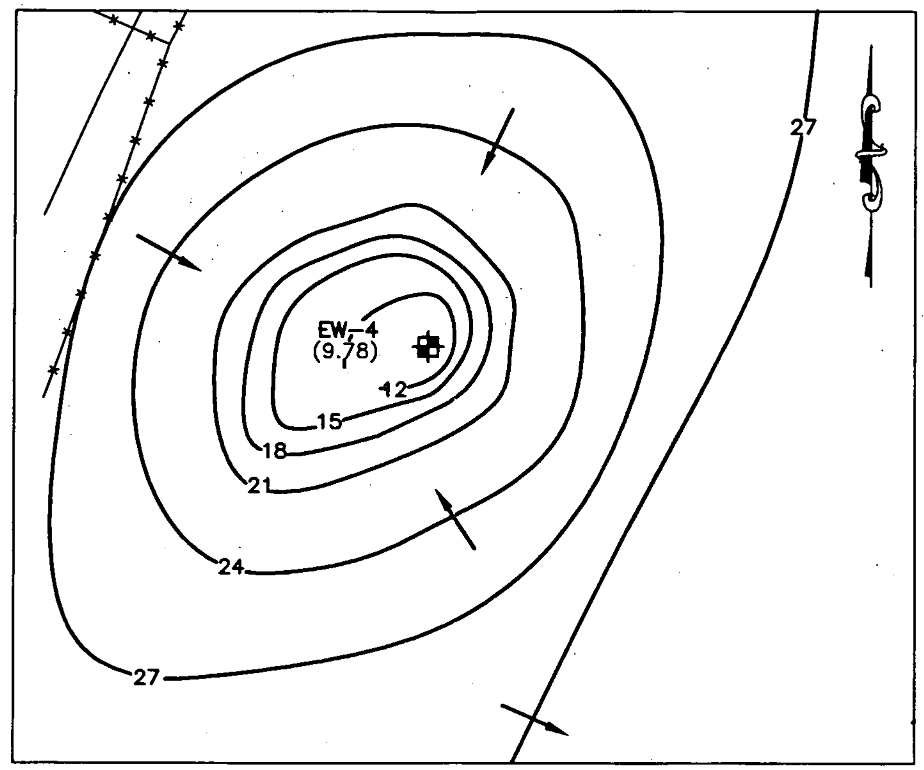
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	SHH20NOV.DWG
DRAWING NUMBER	-
SHEET NUMBER	-



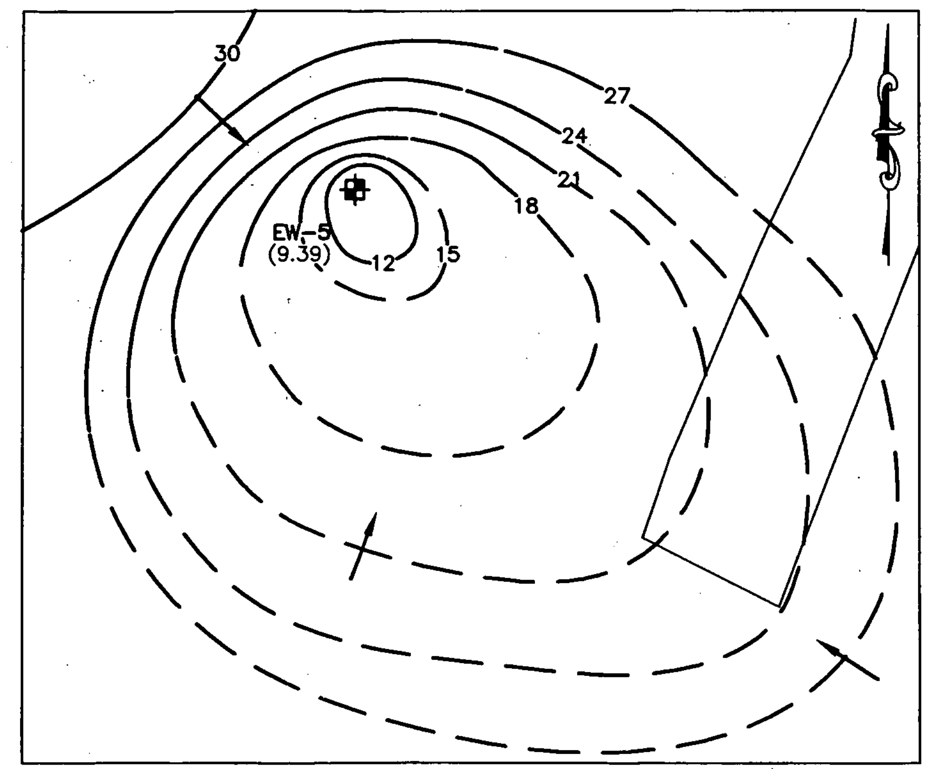
DETAIL A

0 25 50 100
GRAPHIC SCALE IN FEET



DETAIL B

0 25 50 100
GRAPHIC SCALE IN FEET



DETAIL C

0 25 50
GRAPHIC SCALE IN FEET

LEGEND

- MW-223 (26.71) SHALLOW MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- EW-3 (14.16) EXTRACTION WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- P-124 DRY PIEZOMETER (WATER TABLE ELEVATION, FT MSL)
- —27— GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- ——→ INFERRED GROUND-WATER FLOW DIRECTION

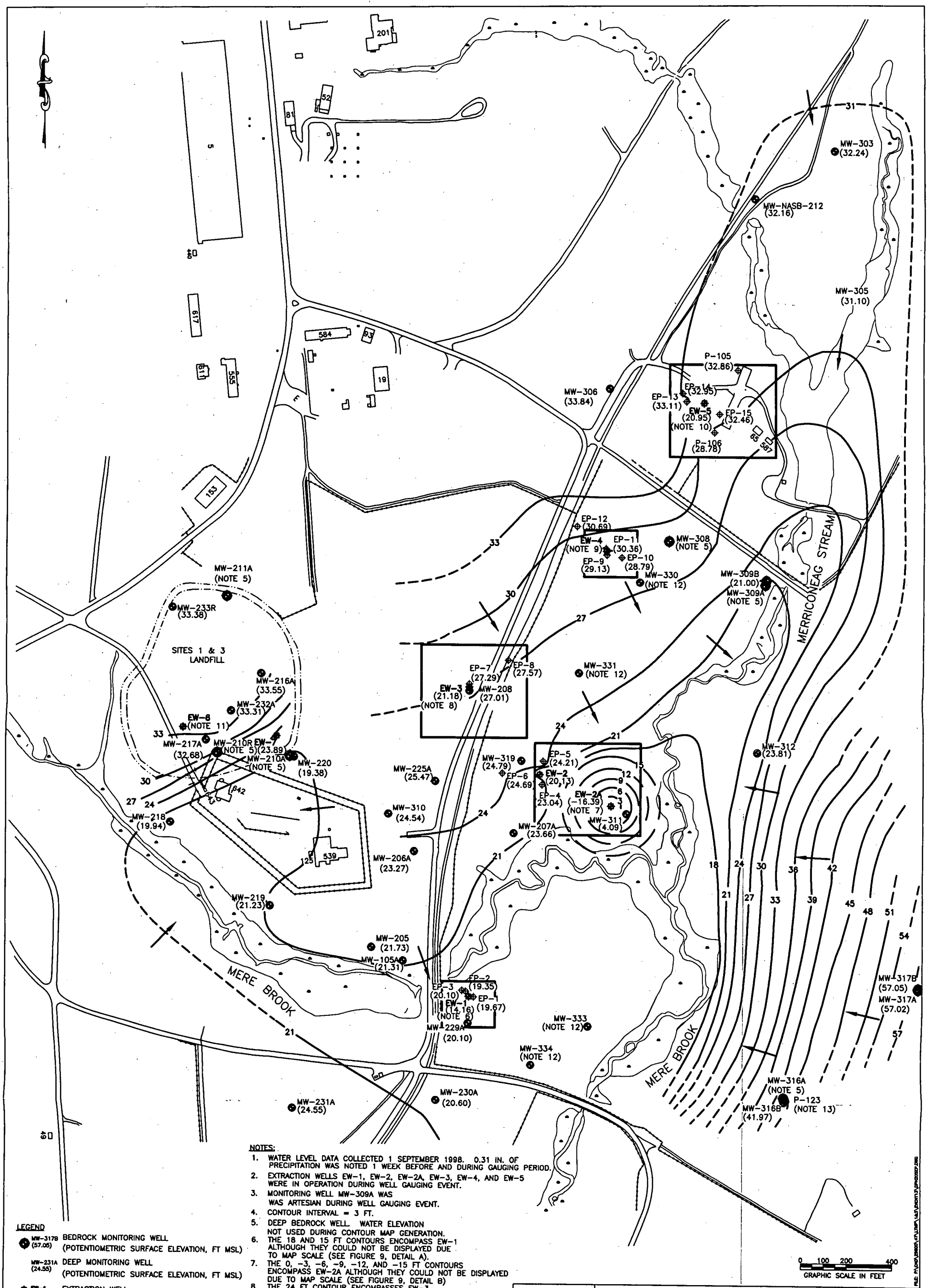
NOTE:
CONTOURS REPRESENT EVALUATION OF PROBABLE CONDITIONS BASED ON PRESENTLY AVAILABLE DATA. SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 7
EXTRACTION WELL DETAIL MAP, 3 NOVEMBER 1998
SHALLOW POTENTIOMETRIC SURFACE

DATE 8 MARCH 1999	EA ENGINEERING, SCIENCE, AND TECHNOLOGY	PROJECT NUMBER 29600.47
DESIGNED BY PLN	THE MAPLE BUILDING, 3 WASHINGTON CENTER, NEWBURGH, NY 12550, (914) 565-8100	SCALE AS SHOWN
DRAWN BY SAP	ALASKA, CALIFORNIA, COLORADO, DELAWARE, FLORIDA, GEORGIA, HAWAII, ILLINOIS, MARYLAND, MASSACHUSETTS, NEBRASKA, NEW JERSEY, NEW YORK, NORTH CAROLINA, TEXAS, WASHINGTON	FILE NAME SHEXNOV.DWG
CHECKED BY PLN		DRAWING NUMBER –
PROJECT MANAGER PLN		SHEET NUMBER –



NOTES:

1. WATER LEVEL DATA COLLECTED 1 SEPTEMBER 1998. 0.31 IN. OF PRECIPITATION WAS NOTED 1 WEEK BEFORE AND DURING GAUGING PERIOD.
2. EXTRACTION WELLS EW-1, EW-2, EW-2A, EW-3, EW-4, AND EW-5 WERE IN OPERATION DURING WELL GAUGING EVENT.
3. MONITORING WELL MW-309A WAS WAS ARTESIAN DURING WELL GAUGING EVENT.
4. CONTOUR INTERVAL = 3 FT.
5. DEEP BEDROCK WELL. WATER ELEVATION NOT USED DURING CONTOUR MAP GENERATION.
6. THE 18 AND 15 FT CONTOURS ENCOMPASS EW-1 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 9, DETAIL A).
7. THE 0, -3, -6, -9, -12, AND -15 FT CONTOURS ENCOMPASS EW-2A ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 9, DETAIL B)
8. THE 24 FT CONTOUR ENCOMPASSES EW-3 ALTHOUGH IT COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 9, DETAIL C).
9. THE 27, 24, 21, AND 18 FT CONTOURS ENCOMPASS EW-4 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 9, DETAIL D).
10. THE 30, 27, 24, AND 21 FT CONTOURS ENCOMPASS EW-5 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 9, DETAIL E).
11. EXTRACTION WELL VAULT FLOODED. UNABLE TO OBTAIN WATER LEVEL READING.
12. MONITORING WELLS INSTALLED OCTOBER 1998. NOT USED DURING CONTOUR MAP GENERATION.
13. MONITORING WELL BLOCKED, UNABLE TO GAUGE.
14. SITE PLAN TAKEN FROM THE INTEGRAPH VERSION 5 BASE-WIDE PLAN PROVIDED BY NAS BRUNSWICK PUBLIC WORKS DEPARTMENT ON 13 OCTOBER 1995.
15. CONTOURS REPRESENT EVALUATION OF PROBABLE CONDITIONS BASED ON PRESENTLY AVAILABLE DATA. SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED.

LEGEND

- MW-317B (57.05) BEDROCK MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- MW-231A (24.55) DEEP MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- EW-1 (14.16) EXTRACTION WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- EP-11 (30.36) DEEP PIEZOMETER (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- FENCE
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- 27 GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION
- BOXED AREA IS DETAILED ON FIGURE 8

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 8
INTERPRETED DEEP GROUND-WATER POTENTIOMETRIC SURFACE CONTOUR MAP, 1 SEPTEMBER 1998

DATE	10 JANUARY 1999
DESIGNED BY	PLN
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	PLN
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	DPH20SEP.DWG
DRAWING NUMBER	-
SHEET NUMBER	-

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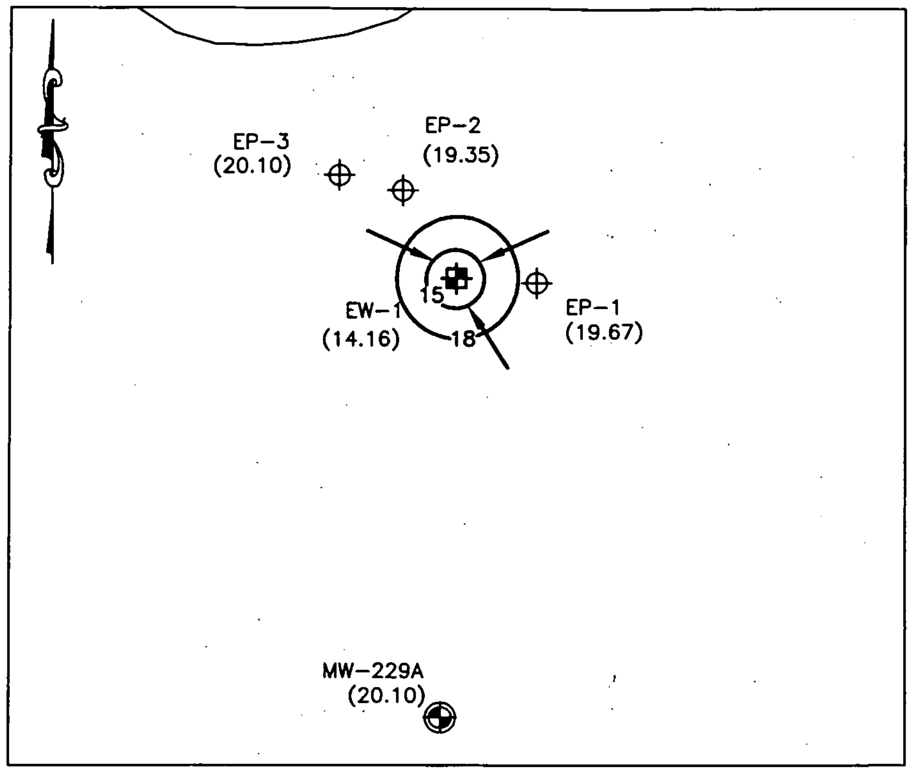
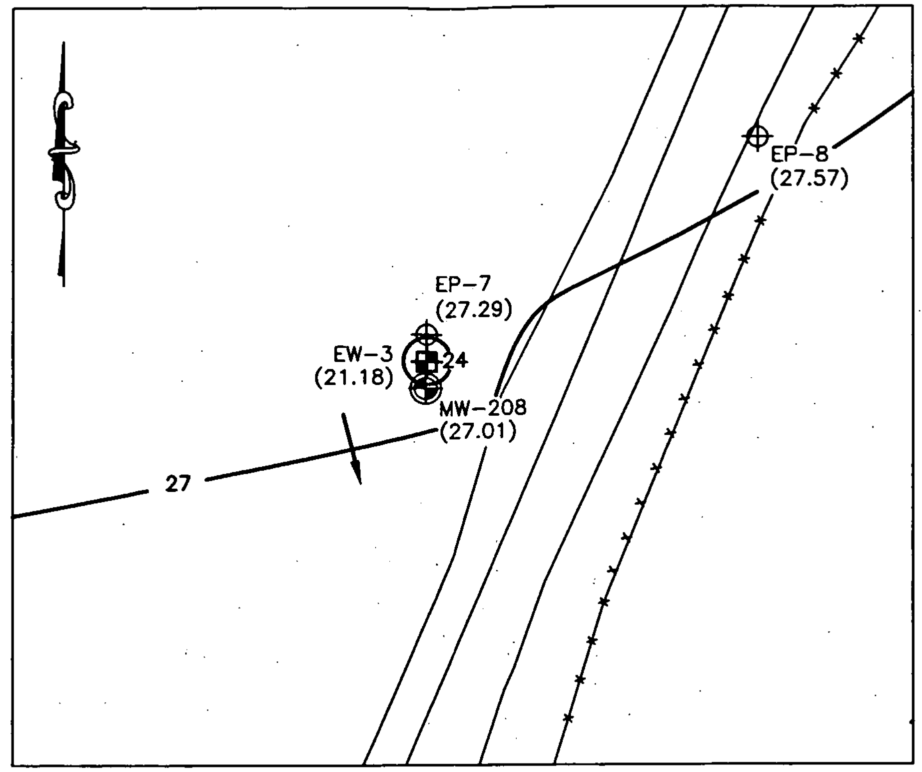


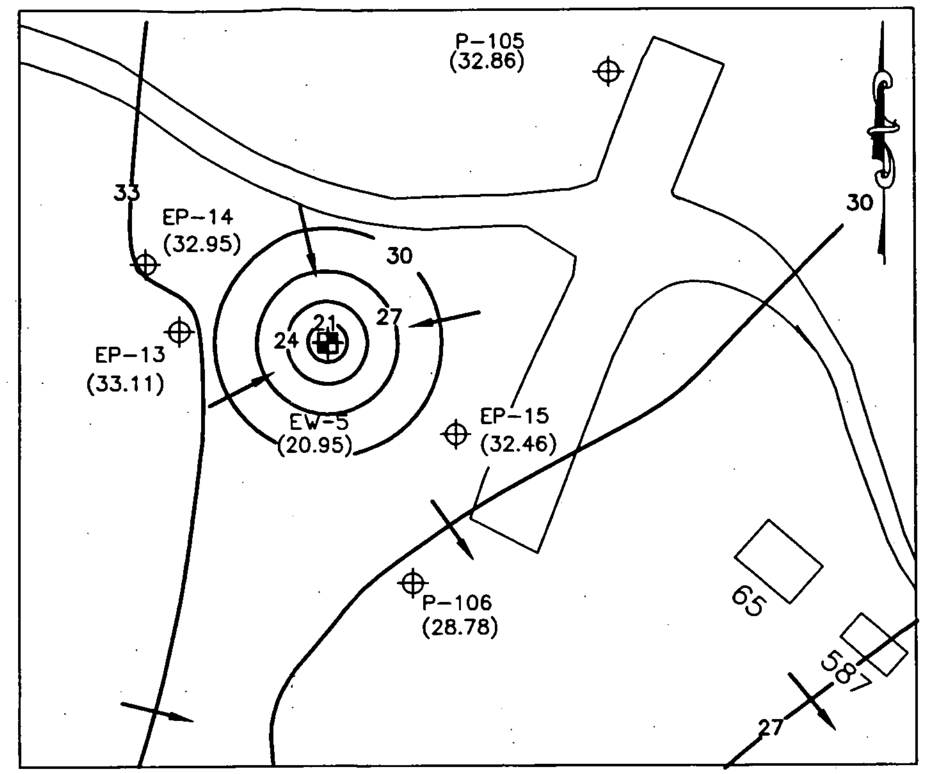
DETAIL A

0 25 50
GRAPHIC SCALE IN FEET



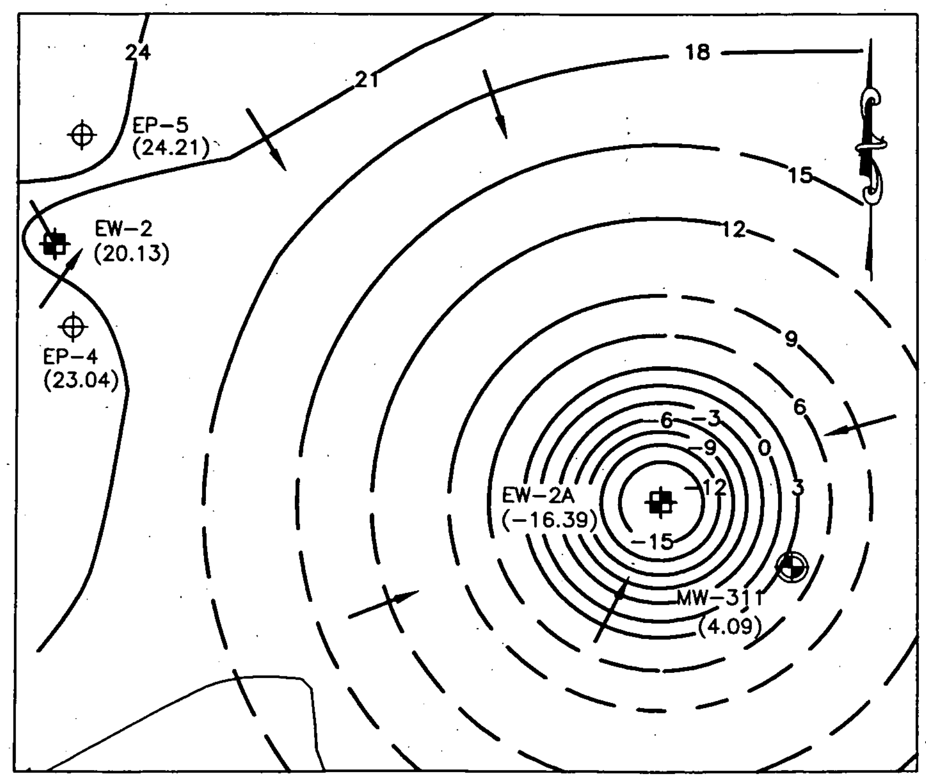
DETAIL C

0 25 50
GRAPHIC SCALE IN FEET



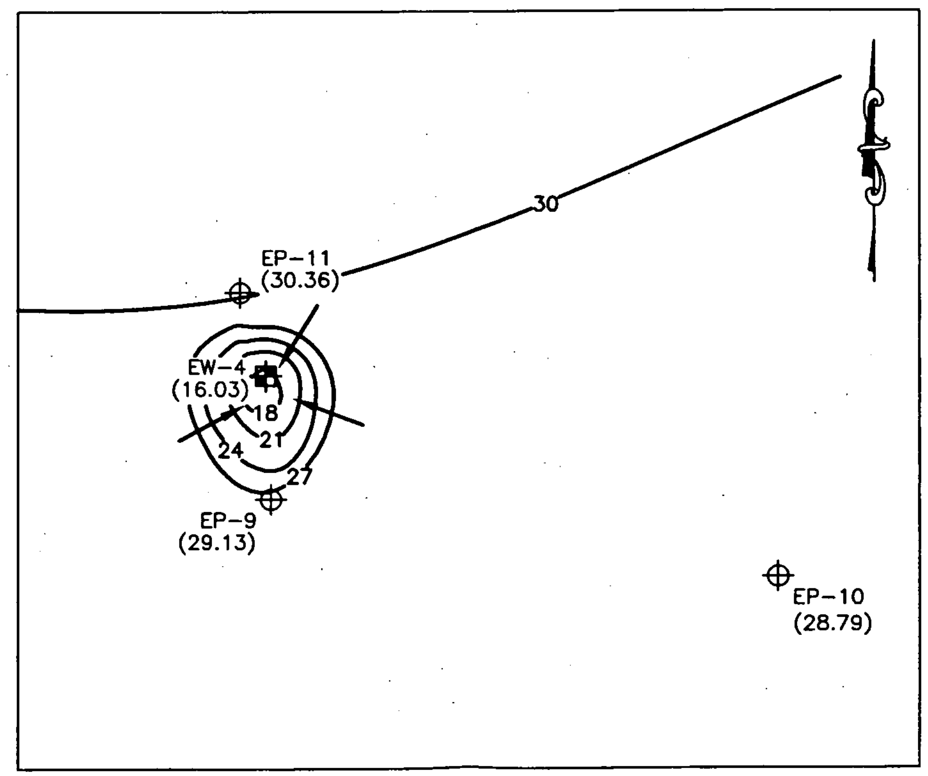
DETAIL E

0 25 50 100
GRAPHIC SCALE IN FEET



DETAIL B

0 25 50 100
GRAPHIC SCALE IN FEET



DETAIL D

0 25 50
GRAPHIC SCALE IN FEET

LEGEND

Symbol	Description
MW-229A (20.10)	DEEP MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
EW-1 (14.16)	EXTRACTION WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
P-103 (36.31)	PIEZOMETER (WATER TABLE ELEVATION, FT MSL)
—27—	GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
——→	INFERRED GROUND-WATER FLOW DIRECTION

NOTE:
CONTOURS REPRESENT EVALUATION OF PROBABLE CONDITIONS BASED ON PRESENTLY AVAILABLE DATA. SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 9
EXTRACTION WELL DETAIL MAP, 1 SEPTEMBER 1998
DEEP POTENTIOMETRIC SURFACE

DATE: 8 MARCH 1999
DESIGNED BY: PLN
DRAWN BY: SAP
CHECKED BY: PLN
PROJECT MANAGER: CEM

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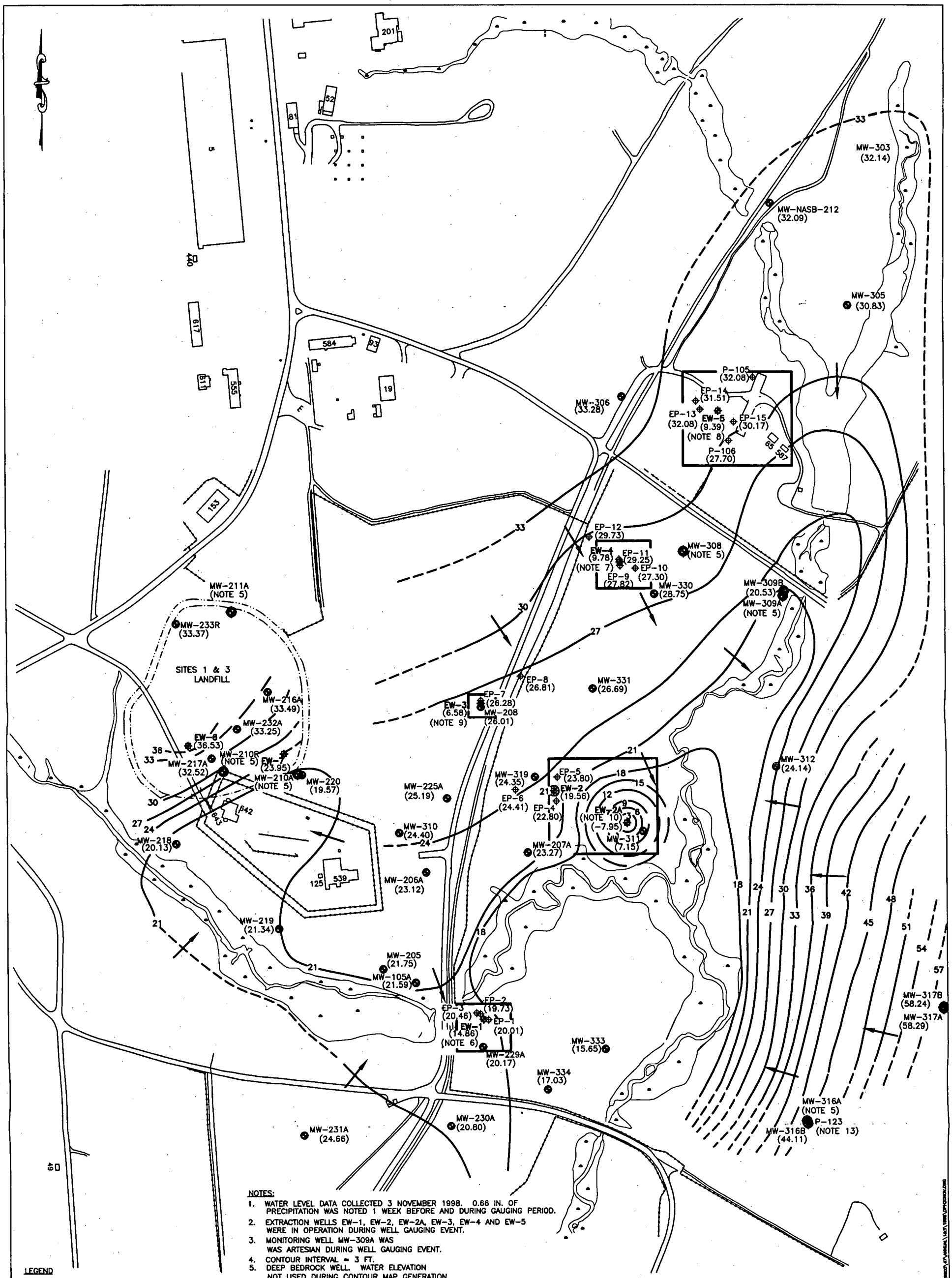
PROJECT NUMBER: 29600.47
SCALE: AS SHOWN
FILE NAME: DPEXSEP.DWG
DRAWING NUMBER: –
SHEET NUMBER: –



NOTES:

1. WATER LEVEL DATA COLLECTED 3 NOVEMBER 1998. 0.66 IN. OF PRECIPITATION WAS NOTED 1 WEEK BEFORE AND DURING GAUGING PERIOD.
2. EXTRACTION WELLS EW-1, EW-2, EW-2A, EW-3, EW-4 AND EW-5 WERE IN OPERATION DURING WELL GAUGING EVENT.
3. MONITORING WELL MW-309A WAS WAS ARTESIAN DURING WELL GAUGING EVENT.
4. CONTOUR INTERVAL = 3 FT.
5. DEEP BEDROCK WELL. WATER ELEVATION NOT USED DURING CONTOUR MAP GENERATION.
6. THE 15 FT CONTOURS ENCOMPASS EW-1 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 11, DETAIL A).
7. THE 27, 24, 21, 18, 15, AND 12 FT CONTOURS ENCOMPASS EW-4 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 11, DETAIL D).
8. THE 30, 27, 24, 21, 18, 15, AND 12 FT CONTOURS ENCOMPASS EW-5 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 11, DETAIL E).
9. THE 24, 21, 18, 15, 12, AND 9 FT CONTOURS ENCOMPASS EW-3 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 11, DETAIL C).
10. THE 0, -3, AND -6 FT CONTOURS ENCOMPASS EW-2A ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE (SEE FIGURE 11, DETAIL B).
11. SITE PLAN TAKEN FROM THE INTEGRAPH VERSION 5 BASE-WIDE PLAN PROVIDED BY NAS BRUNSWICK PUBLIC WORKS DEPARTMENT ON 13 OCTOBER 1995.
12. CONTOURS REPRESENT EVALUATION OF PROBABLE CONDITIONS BASED ON PRESENTLY AVAILABLE DATA. SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED.

LEGEND

- MW-317B (58.24) BEDROCK MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- MW-231A (24.66) DEEP MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- EW-1 (14.86) EXTRACTION WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- EP-11 (29.25) DEEP PIEZOMETER (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- FENCE
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- 27 GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION
- BOXED AREA IS DETAILED ON FIGURE 10

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 10
INTERPRETED DEEP GROUND-WATER POTENTIOMETRIC SURFACE CONTOUR MAP, 3 NOVEMBER 1998

DATE	11 MARCH 1999
DESIGNED BY	PLN
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	CEM
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	DPH2ONOV.DWG
DRAWING NUMBER	-
SHEET NUMBER	-

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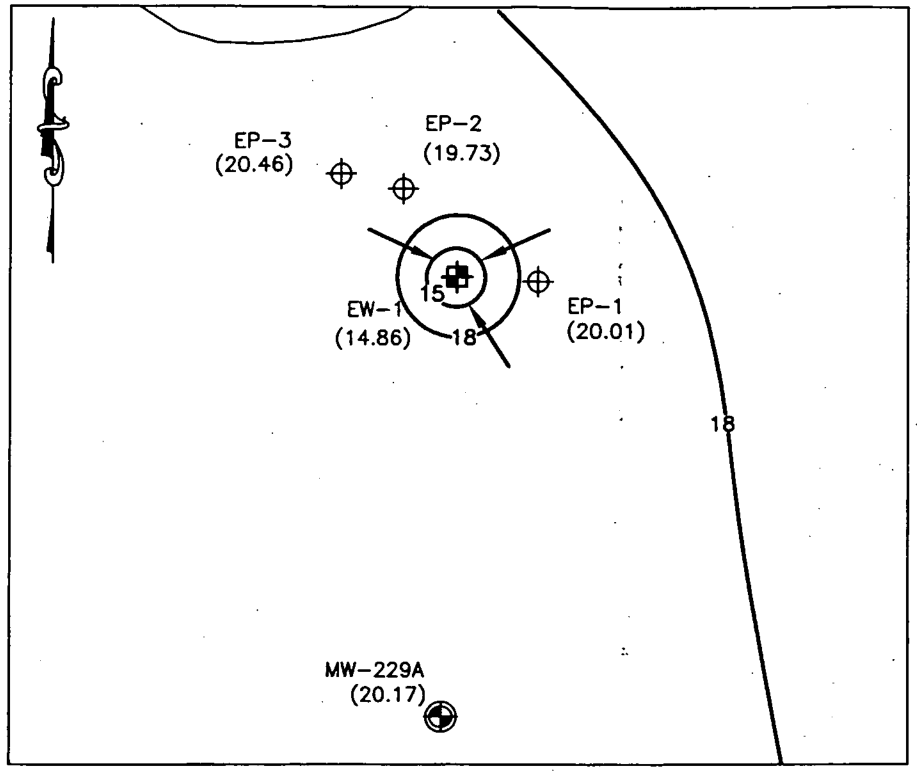
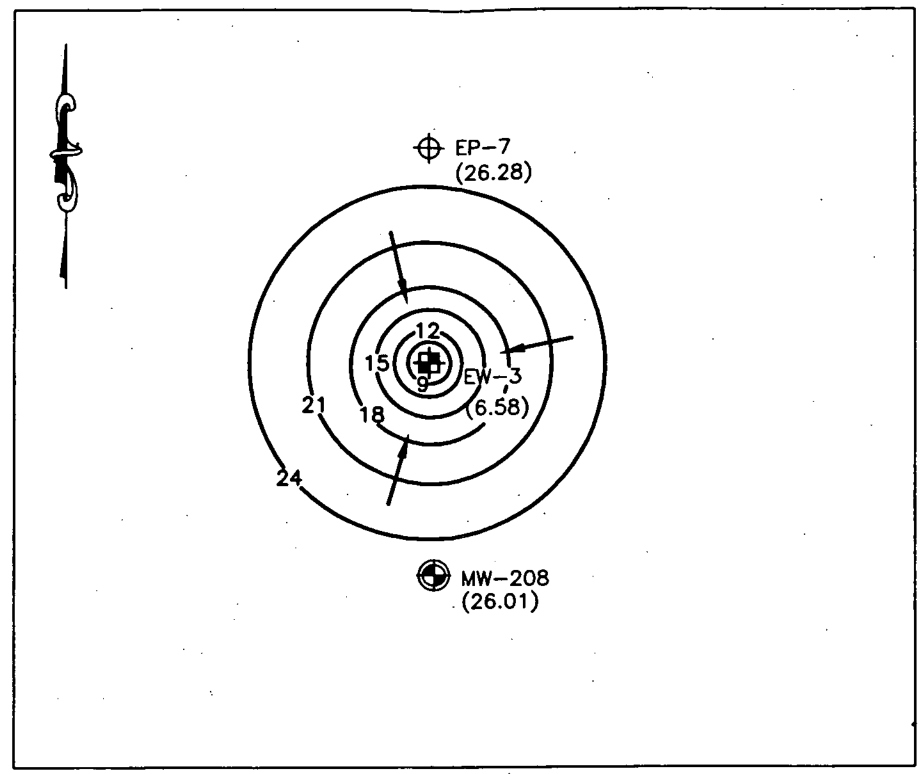


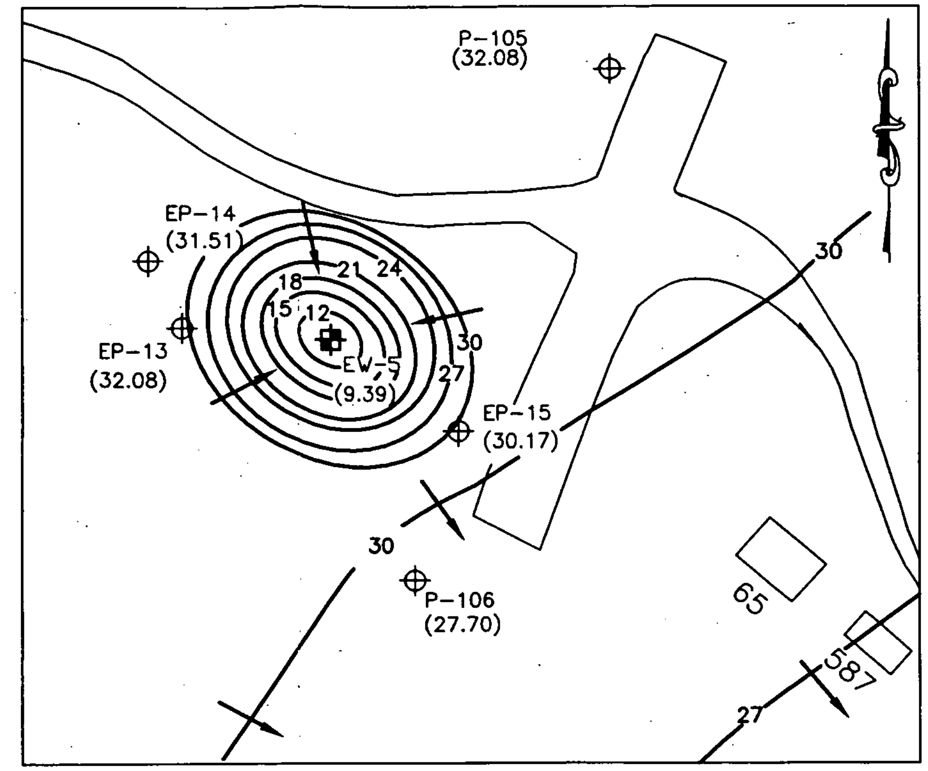
DETAIL A

0 25 50 GRAPHIC SCALE IN FEET



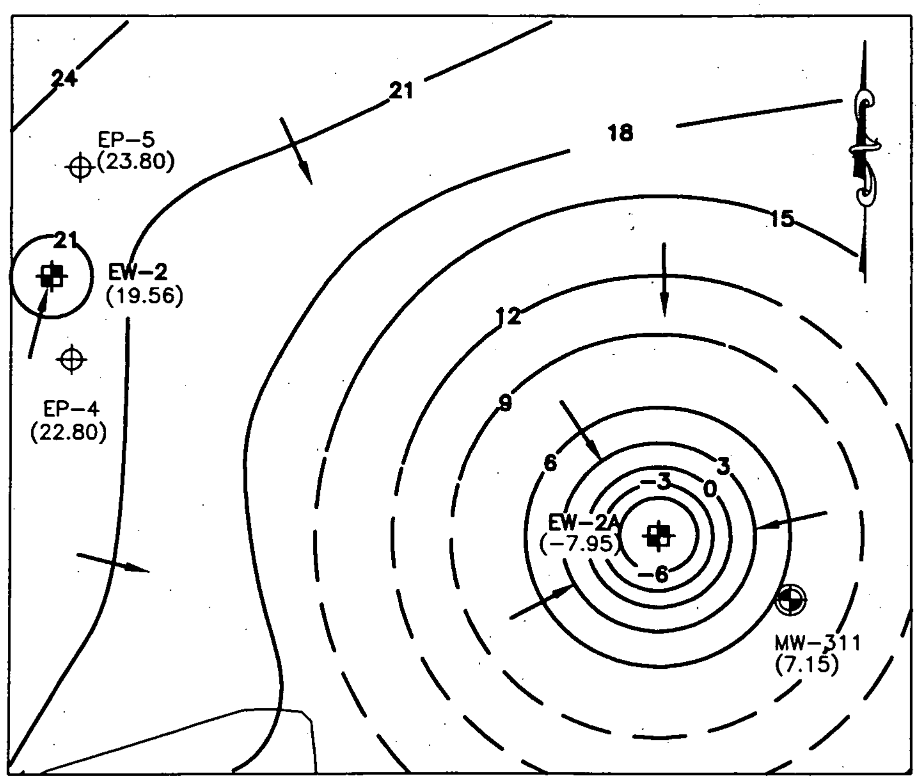
DETAIL C

0 3 6 GRAPHIC SCALE IN FEET



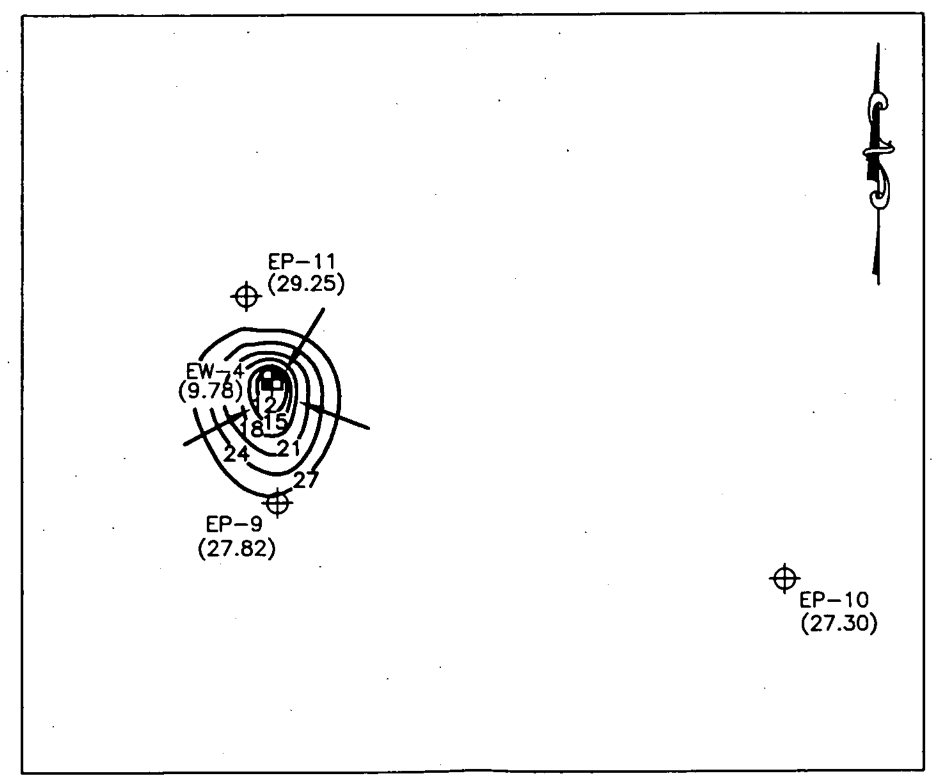
DETAIL E

0 25 50 100 GRAPHIC SCALE IN FEET



DETAIL B

0 25 50 100 GRAPHIC SCALE IN FEET



DETAIL D

0 25 50 GRAPHIC SCALE IN FEET

LEGEND

Symbol	Description
MW-229A (20.17)	DEEP MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
EW-1 (14.16)	EXTRACTION WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
P-103 (36.31)	PIEZOMETER (WATER TABLE ELEVATION, FT MSL)
—24—	GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
——→	INFERRED GROUND-WATER FLOW DIRECTION

NOTE:
CONTOURS REPRESENT EVALUATION OF PROBABLE CONDITIONS BASED ON PRESENTLY AVAILABLE DATA. SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 11
EXTRACTION WELL DETAIL MAP, 3 NOVEMBER 1998
DEEP POTENTIOMETRIC SURFACE

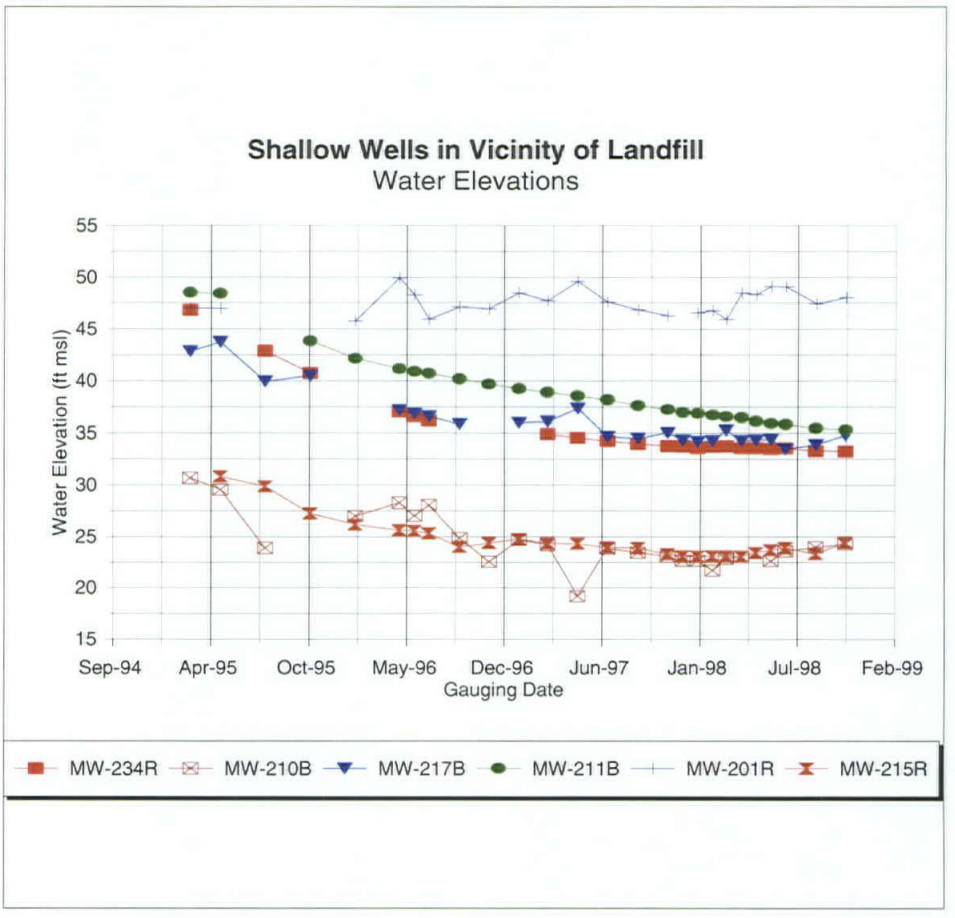
DATE 8 MARCH 1999
DESIGNED BY PLN
DRAWN BY SAP
CHECKED BY PLN
PROJECT MANAGER CEM

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

THE MAPLE BUILDING
3 WASHINGTON CENTER
NEWBURGH, NY 12550
(914) 565-8100

ALASKA CALIFORNIA COLORADO DELAWARE FLORIDA GEORGIA HAWAII ILLINOIS MARYLAND MASSACHUSETTS NEBRASKA NEW JERSEY NEW YORK NORTH CAROLINA TEXAS WASHINGTON

PROJECT NUMBER 29600.47
SCALE AS SHOWN
FILE NAME DPEXSEP.DWG
DRAWING NUMBER –
SHEET NUMBER –



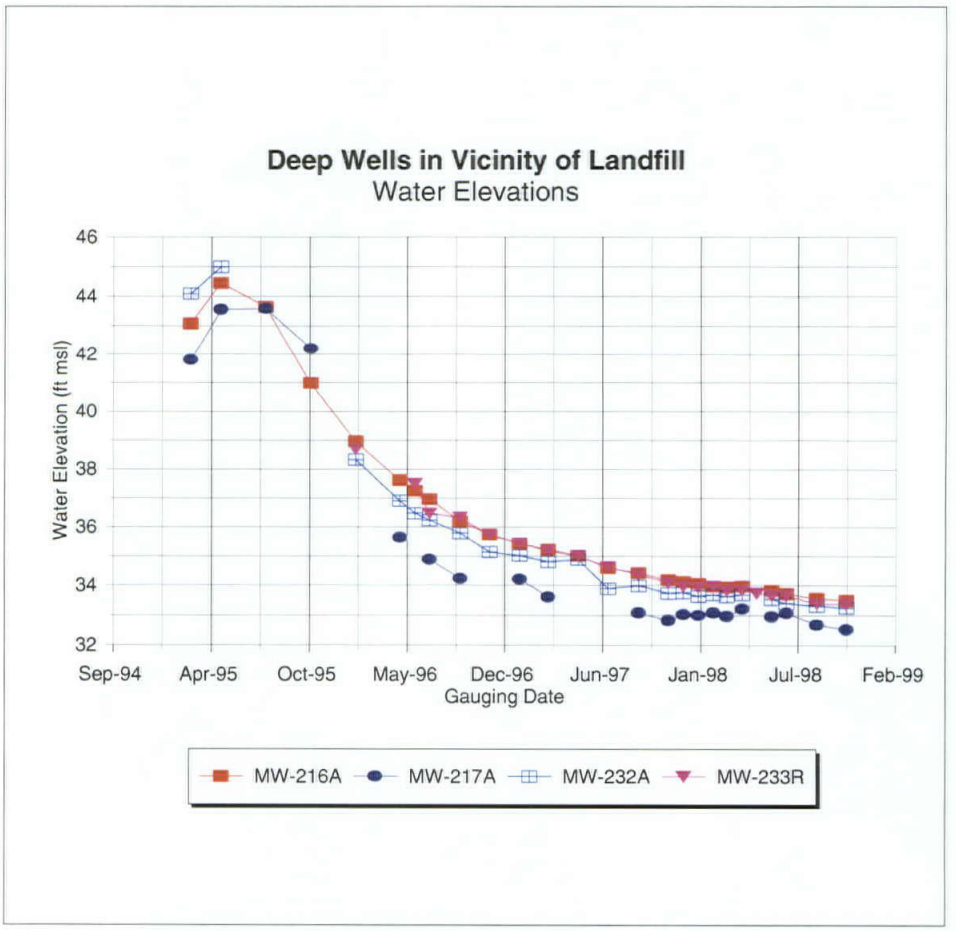
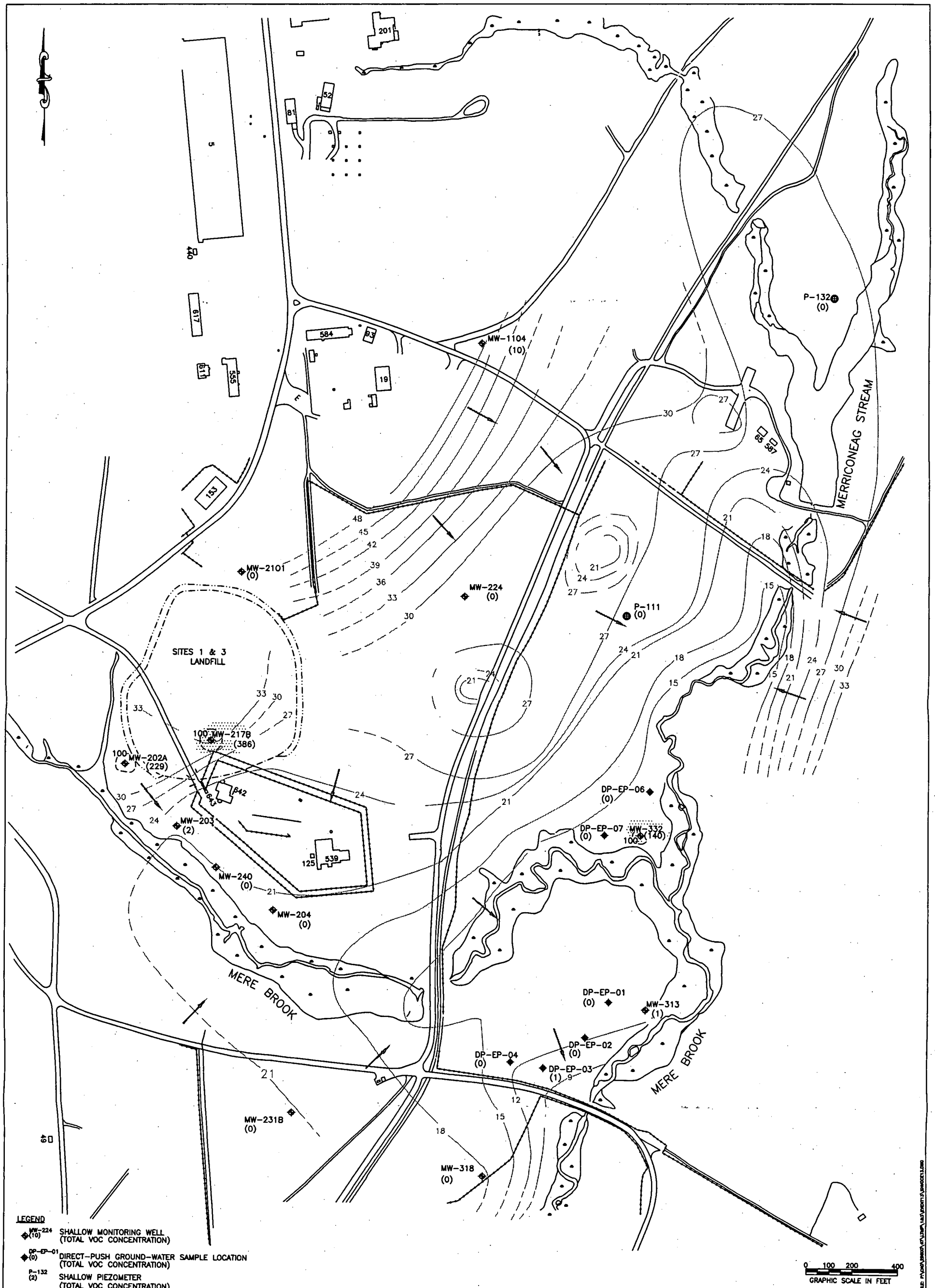


Figure 12: Water elevations within Sites 1 and 3 Landfill, shallow and deep wells.



LEGEND

- MW-224 (10) — SHALLOW MONITORING WELL (TOTAL VOC CONCENTRATION)
- DP-EP-01 (0) — DIRECT-PUSH GROUND-WATER SAMPLE LOCATION (TOTAL VOC CONCENTRATION)
- P-132 (2) — SHALLOW PIEZOMETER (TOTAL VOC CONCENTRATION)
- INFERRED AREA ABOVE STATE MEG/FEDERAL MCL CONCENTRATION
- 100 — 100 ug/L TOTAL VOC CONTOUR (DASHED WHERE INFERRED)
- FENCE
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- 27 — GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION

NOTE:

1. SITE PLAN TAKEN FROM THE INTEGRAPH VERSION 5 BASE-WIDE PLAN PROVIDED BY NAS BRUNSWICK PUBLIC WORKS DEPARTMENT ON 13 OCTOBER 1995.
2. CONTOURS REPRESENT EVALUATION OF PROBABLE CONDITIONS BASED ON PRESENTLY AVAILABLE DATA. SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 13
INTERPRETED TOTAL VOC CONTOUR MAP
SHALLOW WELLS, MONITORING EVENT 13

DATE	10 JANUARY 1999
DESIGNED BY	PLN
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	CEM
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	SHVOCE13.DWG
DRAWING NUMBER	-
SHEET NUMBER	-

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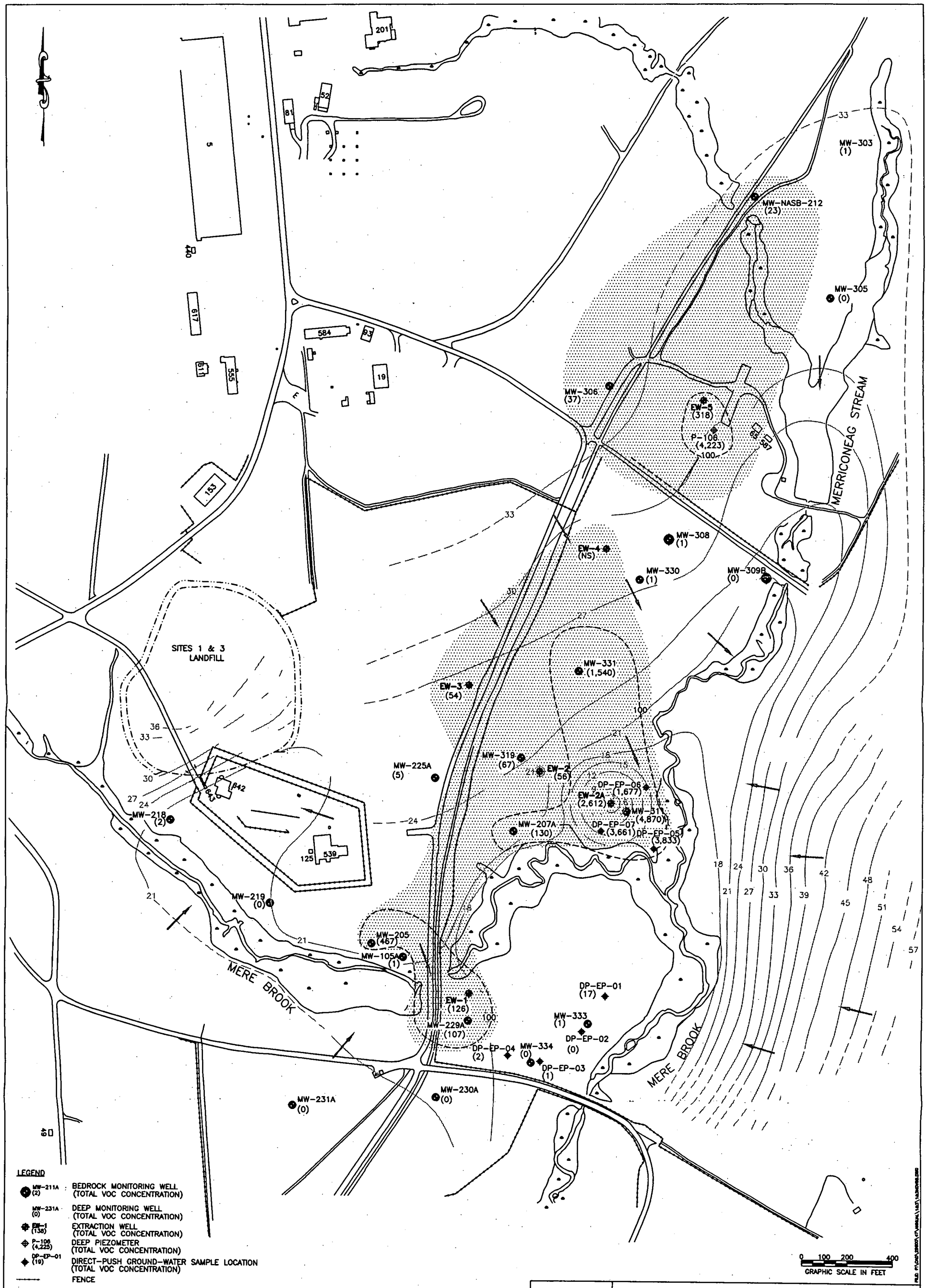

LEGEND

- MW-211A (2) — BEDROCK MONITORING WELL (TOTAL VOC CONCENTRATION)
- MW-231A (0) — DEEP MONITORING WELL (TOTAL VOC CONCENTRATION)
- EW-1 (126) — EXTRACTION WELL (TOTAL VOC CONCENTRATION)
- P-106 (4,225) — DEEP PIEZOMETER (TOTAL VOC CONCENTRATION)
- DP-EP-01 (19) — DIRECT-PUSH GROUND-WATER SAMPLE LOCATION (TOTAL VOC CONCENTRATION)
- FENCE
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- INFERRED AREA ABOVE STATE MEG/FEDERAL MCL CONCENTRATION
- 100 — 100 ug/L TOTAL VOC CONTOUR (DASHED WHERE INFERRED)
- NS — NOT SAMPLED
- —27— GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION

NOTE:

1. SITE PLAN TAKEN FROM THE INTEGRAPH VERSION 5 BASE-WIDE PLAN PROVIDED BY NAS BRUNSWICK PUBLIC WORKS DEPARTMENT ON 13 OCTOBER 1995.
2. CONTOURS REPRESENT EVALUATION OF PROBABLE CONDITIONS BASED ON PRESENTLY AVAILABLE DATA. SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 14
INTERPRETED TOTAL VOC CONTOUR MAP
DEEP WELLS, MONITORING EVENT 13

DATE	10 JANUARY 1999
DESIGNED BY	PLN
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	CEM

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PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	1&3NOV98.DWG
DRAWING NUMBER	-
SHEET NUMBER	-

TABLE 1 SUMMARY OF LONG-TERM MONITORING PROGRAM AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Sample Type/Location	Monitoring Frequency	Sample Parameters			Monitoring Event 13	
		TCL VOC	TAL Elements	Field Parameters[(a)]	Gauged	Sampled
Monitoring Wells						
MW-202A	Tri-Annual	X	X	X	X	X
MW-203	Tri-Annual	X	X	X	X	X
MW-204	Tri-Annual	X	X	X	X	X
MW-217B	Tri-Annual	X	X	X	X	X
MW-218	Tri-Annual	X	X	X	X	X
MW-219	Tri-Annual	X	X	X	X	X
MW-240	Tri-Annual	X	X	X	X	X
MW-2101	Tri-Annual	X	X	X	X	X
EW-6	Tri-Annual	NR	NR	X	X	NR
EW-7	Tri-Annual	NR	NR	X	X	NR
MW-201R	Tri-Annual	NR	NR	X	X	NR
MW-202B	Tri-Annual	NR	NR	X	X	NR
MW-210A	Tri-Annual	NR	NR	X	X	NR
MW-210B	Tri-Annual	NR	NR	X	X	NR
MW-210R	Tri-Annual	NR	NR	X	X	NR
MW-211A	Tri-Annual	NR	NR	X	X	NR
MW-211B	Tri-Annual	NR	NR	X	X	NR
MW-215R	Tri-Annual	NR	NR	X	X	NR
MW-216A	Tri-Annual	NR	NR	X	X	NR
MW-216B	Tri-Annual	NR	NR	X	X	NR
MW-217A	Tri-Annual	NR	NR	X	X	NR
MW-220	Tri-Annual	NR	NR	X	X	NR
MW-232A	Tri-Annual	NR	NR	X	X	NR
MW-233R	Tri-Annual	NR	NR	X	X	NR
MW-234R	Tri-Annual	NR	NR	X	X	NR
EP-16	Tri-Annual	NR	NR	X	X	NR
EP-17	Tri-Annual	NR	NR	X	X	NR
EP-18	Tri-Annual	NR	NR	X	X	NR
EP-19	Tri-Annual	NR	NR	X	X	NR
EP-20	Tri-Annual	NR	NR	X	X	NR

(a) Determination of field parameters in accordance with EPA/600/4-79/020 using the following methods: pH (Method 150.1), temperature (Method 170.1), specific conductance (Method 180.1), dissolved oxygen (Method 360.1), and Eh.

NOTE: TCL = Target Compound List.
VOC = Volatile organic compounds (EPA SW-846).
TAL = Target Analyte List.
NR = Not required.

Sample Type/Location	Monitoring Frequency	Sample Parameters			Monitoring Event 13	
		TCL VOC	TAL Elements	Field Parameters[a]	Gauged	Sampled
Leachate Station Seep						
SEEP-1	Tri-Annual	X	X	X	X[b]	X
SEEP-3	Tri-Annual	X	X	X	X[b]	X
SEEP-4	Tri-Annual	X	X	X	X[b]	X
SEEP-5	Tri-Annual	X	X	X	X[b]	X
Leachate Station Sediment						
LT-1	Tri-Annual	X	X	NR	NR	X
LT-3	Tri-Annual	X	X	NR	NR	X
LT-4	Tri-Annual	X	X	NR	NR	X
LT-5	Tri-Annual	X	X	NR	NR	X
Surface Water						
SW-4	Tri-Annual	X	X	X	X[b]	X
SW-7	Tri-Annual	X	X	X	X[b]	X
SW-8	Tri-Annual	X	X	X	X[b]	X
SW-9	Tri-Annual	X	X	X	X[b]	X
SW-15[c]	Tri-Annual	NR	X	X	X[b]	X
SW-16[c]	Tri-Annual	NR	X	X	X[b]	X

(b) Field measurement of water quality indicator parameters only.
(c) Surface water locations SW-15 and SW-16 are currently sampled as part of a separate program.

TABLE 2 SUMMARY OF LONG-TERM MONITORING PROGRAM AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Sample Type/Location	Monitoring Frequency	Sample Parameters		Monitoring Event 13	
		TCL VOC	Field Parameters[a]	Gauged	Sampled
Monitoring Wells					
MW-105 A	Tri-Annual	X	X	X	X
MW-105 B	Tri-Annual	X	X	X	X
MW-106	Tri-Annual	NR	X	X	NR
MW-205	Tri-Annual	X	X	X	X
MW-206 A	Tri-Annual	NR	X	X	NR
MW-206 B	Tri-Annual	NR	X	X	NR
MW-207 A	Tri-Annual	X	X	X	X
MW-207 B	Tri-Annual	NR	X	X	NR
MW-208	Tri-Annual	NR	X	X	NR
MW-209	Tri-Annual	NR	X	X	NR
MW-222	Tri-Annual	NR	X	X	NR
MW-223	Tri-Annual	NR	X	X	NR
MW-224	Tri-Annual	X	X	X	X
MW-225 A	Tri-Annual	X	X	X	X
MW-225 B	Tri-Annual	NR	X	X	NR
MW-229 A	Tri-Annual	X	X	X	X
MW-229 B	Tri-Annual	NR	X	X	NR
MW-230 A	Tri-Annual	X	X	X	X
MW-231A	Tri-Annual	X	X	X	X
MW-231B	Tri-Annual	X	X	X	X
MW-303	Tri-Annual	X	X	X	X
MW-305	Tri-Annual	X	X	X	X
MW-306	Tri-Annual	X	X	X	X
MW-307	Tri-Annual	NR	X	X	NR
MW-308	Tri-Annual	X	X	X	X

(a) Determination of field parameters in accordance with EPA/600/4-79/020 using the following methods: pH (Method 150.1), temperature (Method 170.1), specific conductance (Method 180.1), dissolved oxygen (Method 360.1), and Eh.

NOTE: TCL = Target Compound List.
VOC = Volatile organic compounds.
NR = Sampling is not required as per Draft Long-Term Monitoring Plan (EA 1998).

Sample Type/Location	Monitoring Frequency	Sample Parameters		Monitoring Event 13	
		TCL VOC	Field Parameters[a]	Gauged	Sampled
Monitoring Wells (Continued)					
MW-309 A	Tri-Annual	NR	X	X	NR
MW-309 B	Tri-Annual	X	X	X	X
MW-310	Tri-Annual	NR	X	X	NR
MW-311	Tri-Annual	X	X	X	X
MW-312	Tri-Annual	NR	X	X	NR
MW-313	Tri-Annual	X	X	X	X
MW-316A	Tri-Annual	NR	X	X	NR
MW-316B	Tri-Annual	NR	X	X	NR
MW-317A	Tri-Annual	NR	X	X	NR
MW-317B	Tri-Annual	NR	X	X	NR
MW-318	Tri-Annual	X	X	X	X
MW-319	Tri-Annual	X	X	X	X
MW-330	Tri-Annual	X	X	X	X
MW-331	Tri-Annual	X	X	X	X
MW-332	Tri-Annual	X	X	X	X
MW-333	Tri-Annual	X	X	X	X
MW-334	Tri-Annual	X	X	X	X
MW-1104	Tri-Annual	X	X	X	X
MW-NASB-212	Tri-Annual	X	X	X	X
P-Series Piezometers					
P-103	Tri-Annual	NR	X	X	NR
P-105	Tri-Annual	NR	X	X	NR
P-106	Tri-Annual	X	X	X	X
P-110	Tri-Annual	NR	X	X	NR
P-111	Tri-Annual	X	X	X	X
P-112	Tri-Annual	NR	X	X	NR
P-121	Tri-Annual	NR	X	X	NR
P-123	Tri-Annual	NR	X	Gauging port obstructed	
P-124	Tri-Annual	NR	X	X	NR
P-132	Tri-Annual	X	X	X	X

Sample Type/Location	Monitoring Frequency	Sample Parameters		Monitoring Event 13	
		TCL VOC	Field Parameters[a]	Gauged	Sampled
Extraction Wells					
EW-1	Tri-Annual	X	X	X	X
EW-2	Tri-Annual	X	X	X	X
EW-2A	Tri-Annual	X	X	X	X
EW-3	Tri-Annual	X	X	X	X
EW-4	Tri-Annual	NS	NS	X	NS
EW-5	Tri-Annual	X	X	X	X
EP-Series Piezometers					
EP-1	Tri-Annual	NR	X	X	NR
EP-2	Tri-Annual	NR	X	X	NR
EP-3	Tri-Annual	NR	X	X	NR
EP-4	Tri-Annual	NR	X	X	NR
EP-5	Tri-Annual	NR	X	X	NR
EP-6	Tri-Annual	NR	X	X	NR
EP-7	Tri-Annual	NR	X	X	NR
EP-8	Tri-Annual	NR	X	X	NR
EP-9	Tri-Annual	NR	X	X	NR
EP-10	Tri-Annual	NR	X	X	NR
EP-11	Tri-Annual	NR	X	X	NR
EP-12	Tri-Annual	NR	X	X	NR
EP-13	Tri-Annual	NR	X	X	NR
EP-14	Tri-Annual	NR	X	X	NR
EP-15	Tri-Annual	NR	X	X	NR
Surface Water					
SW-10	Tri-Annual	X	X	X[b]	X
SW-11	Tri-Annual	X	X	X[b]	X
SW-12	Tri-Annual	X	X	X[b]	X
SW-13	Tri-Annual	X	X	X[b]	X
SW-14	Tri-Annual	X	X	X[b]	X
GP-1	Tri-Annual	NR	X	X	NR
GP-2	Tri-Annual	NR	X	X	NR
GP-3	Tri-Annual	NR	X	X	NR
GP-4	Tri-Annual	NR	X	X	NR
GP-5	Tri-Annual	NR	X	X	NR
GP-6	Tri-Annual	NR	X	X	NR

(b) Measurement of water quality indicator parameters only.

NOTE: NS = Not sampled.

TABLE 3 MONITORING WELL GAUGING SUMMARY, SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Well Designation	Well Riser Elevation (ft MSL)	Depth to Well Bottom (ft below top of well riser)	Slurry Wall	Bi-Monthly Gauging Data (1 September 1998)		Monitoring Event 13 Gauging Data (3 November 1998)	
				Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)	Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)
Shallow Monitoring Wells							
MW-201R	58.88	39.51	Outside	11.46	47.42	10.86	48.02
MW-202A	52.40	31.09	Outside	21.43	30.97	20.17	32.23
MW-202B	53.04	17.93	Outside	Well dry	---	Well dry	---
MW-203	52.75	42.04	Outside	31.90	20.85	31.69	21.06
MW-204	50.50	37.18	Outside	30.15	20.35	30.03	20.47
MW-210B	54.72	40.50	Outside	30.75	23.97	30.44	24.28
MW-211B	65.44	36.50	Inside	29.98	35.46	30.14	35.30
MW-215R	62.26	49.95	Inside	29.30	32.96	29.38	32.88
MW-217B	61.25	34.60	Inside	27.40	33.85	26.47	34.78
MW-234R	68.55	59.52	Inside	35.25	33.30	35.30	33.25
MW-240[a]	52.21	42.60	Outside	No data	No data	31.21	21.00
MW-2101	61.05	30.00	Outside	12.45	48.60	11.88	49.17
Deep Monitoring Wells							
MW-216A	71.17	46.96	Inside	37.62	33.55	37.68	33.49
MW-217A	61.78	44.56	Inside	29.10	32.68	29.26	32.52
MW-218	54.16	53.54	Outside	34.22	19.94	34.03	20.13
MW-219	51.87	71.82	Outside	30.64	21.23	30.53	21.34
MW-220	47.20	51.50	Outside	27.82	19.38	27.63	19.57
MW-232A	71.18	54.76	Inside	37.87	33.31	37.93	33.25
MW-233R	63.94	50.49	Inside	30.56	33.38	30.57	33.37
Bedrock Monitoring Wells							
MW-210A	52.17	105.60	Outside	19.07	33.10	18.94	33.23
MW-210R	55.90	107.50	Inside	22.00	33.90	21.94	33.96
MW-211A	65.59	137.02	Inside	24.80	40.79	24.40	41.19
Extraction Wells							
EW-6[b]	57.74	39.05	Inside	No data	No data	21.21	36.53
EW-7	51.13	50.55	Inside	27.24	23.89	27.18	23.95
Shallow EP Series Piezometers							
EP-16	58.92	49.90	Inside	35.61	23.31	34.50	24.42
EP-17	69.73	42.85	Inside	36.15	33.58	36.22	33.51
EP-18	68.58	38.10	Inside	34.98	33.60	36.08	32.50
EP-19	68.22	47.30	Inside	34.58	33.64	34.69	33.53
EP-20	69.55	47.25	Inside	35.77	33.78	35.81	33.74

(a) Well installed October 1998.
(b) Unable to gauge EW-6 during the 1 September 1998 gauging event due to excess water in the vault.

NOTE: MSL = Mean sea level.
Dashes (---) indicate data cannot be calculated because well was dry.

TABLE 4 MONITORING WELL GAUGING SUMMARY
EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Well Designation	Well Riser Elevation (ft MSL)	Depth to Well Bottom (ft below top of well riser)	Bi-Monthly Gauging Data (1 September 1998)		Monitoring Event 13 Gauging Data (3 November 1998)	
			Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)	Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)
Shallow Monitoring Wells						
MW-105B	24.55	22.91	8.46	16.09	8.00	16.55
MW-106	51.26	37.27	24.49	26.77	25.17	26.09
MW-206B	42.77	27.17	20.09	22.68	19.72	23.05
MW-207B	22.90	27.17	7.36	15.54	5.76	17.14
MW-209	54.84	32.38	27.01	27.83	27.54	27.30
MW-222	57.43	45.34	28.68	28.75	29.33	28.10
MW-223	53.71	42.61	26.38	27.33	27.00	26.71
MW-224	57.63	46.95	27.68	29.95	29.41	28.22
MW-225B	46.25	42.00	21.88	24.37	21.70	24.55
MW-229B	30.08	32.70	15.36	14.72	14.89	15.19
MW-231B	46.31	57.86	25.15	21.16	25.10	21.21
MW-307	62.70	22.21	16.07	46.63	15.80	46.90
MW-313	21.39	37.14	9.25	12.14	9.08	12.31
MW-318	24.28	25.14	6.38	17.90	5.78	18.50
MW-332[a]	25.33	18.60	No data	No data	12.20	13.13
MW-1104	60.09	27.55	12.33	47.76	11.62	48.47
Deep Monitoring Wells						
MW-105A	24.19	46.87	2.88	21.31	2.60	21.59
MW-205	45.99	78.77	24.26	21.73	24.24	21.75
MW-206A	43.02	74.36	19.75	23.27	19.90	23.12
MW-207A	24.06	73.22	0.40	23.66	0.79	23.27
MW-208	49.40	103.33	22.39	27.01	23.39	26.01
MW-225A	45.95	76.03	20.48	25.47	20.76	25.19
MW-229A	33.83	64.97	13.73	20.10	13.66	20.17
MW-230A	36.32	82.08	15.72	20.60	15.52	20.80
MW-231A	45.41	62.42	20.86	24.55	20.75	24.66
MW-303	44.28	71.62	12.04	32.24	12.14	32.14
MW-305	43.09	54.12	11.99	31.10	12.26	30.83
MW-306	52.12	56.98	18.28	33.84	18.84	33.28
MW-310	53.39	72.83	28.85	24.54	28.99	24.40
MW-311	21.48	55.78	17.39	4.09	14.33	7.15
MW-312	35.97	71.15	12.16	23.81	11.83	24.14

(a) Monitoring wells installed October 1998.

NOTE: MSL = Mean sea level.

Well Designation	Well Riser Elevation (ft MSL)	Depth to Well Bottom (ft below top of well riser)	Bi-Monthly Gauging Data (1 September 1998)		Monitoring Event 13 Gauging Data (3 November 1998)	
			Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)	Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)
Deep Monitoring Wells (Continued)						
MW-319	40.16	72.44	15.37	24.79	15.81	24.35
MW-330[(a)]	35.71	33.40	No data	No data	6.96	28.75
MW-331[(a)]	30.54	53.80	No data	No data	3.85	26.69
MW-333[(a)]	27.25	40.00	No data	No data	11.60	15.65
MW-334[(a)]	30.93	41.60	No data	No data	13.90	17.03
MW-NASB-212	41.64	67.34	9.48	32.16	9.55	32.09
Bedrock Monitoring Wells						
MW-308	37.70	72.85	5.54	32.16	5.75	31.95
MW-309A	22.84	72.71	+3.47	26.31	+3.47	26.31
MW-309B	22.32	59.43	1.32	21.00	1.79	20.53
MW-316A	53.71	103.10	21.66	32.05	20.58	33.13
MW-316B	54.40	57.85	12.43	41.97	10.29	44.11
MW-317A	71.35	120.79	14.33	57.02	13.06	58.29
MW-317B	70.10	96.95	13.05	57.05	11.86	58.24
Shallow P-Series Piezometers						
P-103	60.35	29.05	24.31	36.04	24.55	35.80
P-110	56.70	24.14	Dry	---	Dry	---
P-111	31.00	9.99	5.19	26.29	4.52	26.96
P-112	41.12	16.41	12.54	28.58	11.24	29.88
P-121	50.78	17.35	15.48	35.30	15.75	35.03
P-124	51.12	23.25	Dry	---	Dry	---
P-132	42.95	32.46	18.11	24.84	17.90	25.05
Deep P-Series Piezometers						
P-105	42.08	70.35	9.22	32.86	10.00	32.08
P-106	38.83	71.06	10.05	28.78	11.13	27.70
P-123	54.19	Blocked	Blocked	---	Blocked	---
Extraction Wells						
EW-1	25.34	99.66	11.18	14.16	10.48	14.86
EW-2	31.63	90.86	11.50	20.13	12.07	19.56
EW-2A	22.27	66.00	38.66	-16.39	30.22	-7.95
EW-3	41.18	67.04	20.00	21.18	34.60	6.58
EW-4	37.13	69.37	21.10	16.03	27.35	9.78
EW-5	36.25	84.99	15.30	20.95	26.86	9.39

NOTE: Dashes (---) indicate data cannot be calculated because well blocked or dry.

Well Designation	Well Riser Elevation (ft MSL)	Depth to Well Bottom (ft below top of well riser)	Bi-Monthly Gauging Data (1 September 1998)		Monitoring Event 13 Gauging Data (3 November 1998)	
			Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)	Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)
Deep EP-Series Piezometers						
EP-1	31.67	100.51	12.00	19.67	11.66	20.01
EP-2	29.74	99.00	10.39	19.35	10.01	19.73
EP-3	27.91	89.21	7.81	20.10	7.45	20.46
EP-4	32.59	91.11	9.55	23.04	9.79	22.80
EP-5	34.61	79.85	10.40	24.21	10.81	23.80
EP-6	40.14	83.51	15.45	24.69	15.73	24.41
EP-7	48.49	70.20	21.20	27.29	22.21	26.28
EP-8	47.31	80.38	19.74	27.57	20.50	26.81
EP-9	37.84	62.46	8.71	29.13	10.02	27.82
EP-10	37.78	58.00	8.99	28.79	10.48	27.30
EP-11	41.59	65.03	11.23	30.36	12.34	29.25
EP-12	49.38	69.61	18.69	30.69	19.65	29.73
EP-13	38.96	71.03	5.85	33.11	6.88	32.08
EP-14	43.46	80.05	10.51	32.95	11.95	31.51
EP-15	45.37	82.68	12.91	32.46	15.20	30.17

Surface Water Gauging Stations					
Well Designation	Gauging Point Elevation (ft MSL)	Bi-Monthly Gauging Data (1 September 1998)		Monitoring Event 13 Gauging Data (3 November 1998)	
		Depth to Water (ft below gauging point)	Surface Water Elevation (ft MSL)	Depth to Water (ft below gauging point)	Surface Water Elevation (ft MSL)
GP-1	31.10	2.42	28.68	3.00	28.10
GP-2	23.92	+2.36	26.28	+1.65	25.57
GP-3	27	3.73	23.60	3.57	23.76
GP-4	18.39	2.80	15.59	2.75	15.64
GP-5	23.38	9.20	14.18	9.45	13.93
GP-6	15.22	10.70	4.52	8.80	6.42

TABLE 5 GROUND-WATER EXTRACTION FLOW RATE AND RUN TIME SUMMARY, AUGUST-NOVEMBER 1998
GROUND-WATER EXTRACTION AND TREATMENT SYSTEM (BUILDING 50)
NAVAL AIR STATION, BRUNSWICK, MAINE

	Date															
	8/01	8/02	8/03	8/04	8/05	8/06	8/07	8/08	8/09	8/10	8/11	8/12	8/13	8/14	8/15	8/16
EW-1																
Flow rate (gpm)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2																
Flow rate (gpm)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2A																
Flow rate (gpm)	17.0	17.0	16.0	17.0	17.0	17.0	17.0	17.0	17.0	16.0	16.0	14.5	14.5	14.5	14.5	14.5
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-3[a]																
Flow rate (gpm)	8.0	8.0	8.0	9.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	11.5	12.0	12.0	12.0	12.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-4																
Flow rate (gpm)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-5																
Flow rate (gpm)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0

(a) Values obtained by subtracting the flow of EW-1, EW-2, EW-2A, EW-4, and EW-5 from the Eastern Plume influent totalized flow.

	Date														
	8/17	8/18	8/19	8/20	8/21	8/22	8/23	8/24	8/25	8/26	8/27	8/28	8/29	8/30	8/31
EW-1															
Flow rate (gpm)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	24.0	24.0	16.5	24.0	6.5	14.5
EW-2															
Flow rate (gpm)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	24.0	24.0	16.5	24.0	6.5	14.5
EW-2A															
Flow rate (gpm)	13.0	17.0	17.0	17.0	17.0	17.0	17.0	16.5	16.0	14.5	11.5	12.5	12.5	12.5	12.8
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	24.0	24.0	16.5	24.0	6.5	14.5
EW-3[a]															
Flow rate (gpm)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	10.0	11.5	14.5	13.5	12.5	12.5	12.2
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	24.0	24.0	16.5	24.0	6.5	14.5
EW-4															
Flow rate (gpm)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	21.0	21.0	21.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	24.0	24.0	16.5	24.0	6.5	14.5
EW-5															
Flow rate (gpm)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	24.0	24.0	16.5	24.0	6.5	14.5

	Date														
	9/01	9/02	9/03	9/04	9/05	9/06	9/07	9/08	9/09	9/10	9/11[a]	9/12[a]	9/13	9/14	9/15
EW-1															
Flow rate (gpm)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2															
Flow rate (gpm)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2A															
Flow rate (gpm)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	17.0	17.0	17.0	17.0	17.0	17.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-3[a]															
Flow rate (gpm)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0	5.0	5.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-4															
Flow rate (gpm)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-5															
Flow rate (gpm)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0

	Date														
	9/16	9/17	9/18	9/29	9/20	9/21	9/22	9/23	9/24	9/25	9/26	9/27	9/28	9/29	9/30
EW-1															
Flow rate (gpm)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2															
Flow rate (gpm)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2A															
Flow rate (gpm)	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-3[(a)]															
Flow rate (gpm)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-4															
Flow rate (gpm)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-5															
Flow rate (gpm)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0

	Date															
	10/1	10/2	10/3	10/4	10/5	10/6	10/7	10/8	10/9	10/10	10/11	10/12	10/13	10/14	10/15	10/16
EW-1																
Flow rate (gpm)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.2
Run time (hours)	24.0	22.5	24.0	24.0	24.0	24.0	24.0	24.0	23.0	24.0	24.0	24.0	24.0	24.0	20.0	24.0
EW-2																
Flow rate (gpm)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	5.0	5.0	5.0	13.8	14.0
Run time (hours)	24.0	22.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	24.0
EW-2A																
Flow rate (gpm)	17.0	17.0	17.0	17.0	17.0	17.0	18.0	22.0	19.3	19.0	19.0	19.0	19.0	19.0	15.2	15.6
Run time (hours)	24.0	22.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	24.0
EW-3																
Flow rate (gpm)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	23.0	23.0
Run time (hours)	24.0	22.5	24.0	24.0	24.0	24.0	24.0	24.0	21.0	24.0	24.0	24.0	24.0	24.0	20.0	24.0
EW-4																
Flow rate (gpm)	21.0	21.0	21.0	21.0	21.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EW-5																
Flow rate (gpm)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	10.0	10.0	10.0	20.0	20.0
Run time (hours)	24.0	22.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	24.0

	Date														
	10/17	10/18	10/19	10/20	10/21	10/22	10/23	10/24	10/25	10/26	10/27	10/28	10/29	10/30	10/31
EW-1															
Flow rate (gpm)	10.0	10.0	10.0	9.7	10.0	8.6	8.5	8.6	8.7	8.8	8.6	8.4	8.6	8.6	8.6
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2															
Flow rate (gpm)	14.0	14.0	13.0	11.8	14.0	12.5	12.7	12.7	12.7	12.7	12.5	12.6	12.6	12.6	12.6
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2A															
Flow rate (gpm)	15.0	15.0	15.0	20.9	15.6	13.2	13.2	13.3	13.3	13.4	13.3	13.3	13.4	13.4	13.4
Run time (hours)	24.0	24.0	24.0	12.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-3															
Flow rate (gpm)	23.0	23.0	25.0	23.0	24.6	21.8	21.8	21.5	21.2	21.0	20.9	20.4	18.5	20.2	20.2
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-4															
Flow rate (gpm)	0.0	0.0	0.0	0.0	0.0	25.6	25.9	25.6	25.6	25.8	26.4	26.1	26.3	26.4	26.4
Run time (hours)	0.0	0.0	0.0	0.0	0.0	18.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-5															
Flow rate (gpm)	20.0	20.0	20.0	20.0	20.0	18.6	18.6	18.6	18.7	18.7	18.6	18.1	18.7	18.4	18.4
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0

	Date														
	11/1	11/2	11/3	11/4	11/5	11/6	11/7	11/8	11/9	11/10	11/11	11/12	11/13	11/14	11/15
EW-1															
Flow rate (gpm)		8.2	8.4	9.7	9.7	10.0	10.0	10.0	10.0	10.0	9.7	9.9	10.0	9.9	9.9
Run time (hours)		24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	20.5	24.0	24.0	24.0	24.0	24.0
EW-2															
Flow rate (gpm)		12.8	12.3	14.3	14.4	14.8	14.6	14.6	14.5	14.7	14.2	14.3	14.8	14.8	14.9
Run time (hours)		24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	24.0	24.0	24.0	24.0	24.0
EW-2A															
Flow rate (gpm)		13.4	13.4	16.6	16.2	16.2	16.2	16.2	16.2	16.3	16.5	16.5	16.4	16.6	16.6
Run time (hours)		24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	24.0	24.0	24.0	24.0	24.0
EW-3															
Flow rate (gpm)		21.1	20.5	20.2	19.2	19.9	19.5	19.5	19.1	19.8	20.5	19.4	21.3	21.3	21.2
Run time (hours)		24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	20.5	24.0	24.0	24.0	24.0	24.0
EW-4															
Flow rate (gpm)[(b)]		26.7	26.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Run time (hours)[(b)]		24.0	24.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EW-5															
Flow rate (gpm) [(a)]		18.4	18.3	19.8	19.7	19.7	19.6	19.6	19.5	19.37	19.4	18.9	19.1	19.3	19.3
Run time (hours)		24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	24.0	24.0	24.0	24.0	24.0

(b) Extraction well EW-4 pump assembly removed for evaluation/replacement as of 11/4.

	Date														
	11/16	11/17	11/18	11/19	11/20	11/21	11/22	11/23	11/24	11/25	11/26	11/27	11/28	11/29	11/30
EW-1															
Flow rate (gpm)	9.8	9.8	10.2	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.6
Run time (hours)	24.0	24.0	24.0	23.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2															
Flow rate (gpm)	14.9	14.9	15.0	14.9	14.8	14.9	14.9	15.0	15.0	14.0	14.0	14.0	15.0	15.0	15.0
Run time (hours)	24.0	24.0	24.0	23.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2A															
Flow rate (gpm)	16.9	16.9	17.0	17.1	17.0	16.5	16.5	16.0	17.0	17.0	17.0	17.0	17.0	17.0	16.9
Run time (hours)	24.0	24.0	24.0	23.5	12.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-3															
Flow rate (gpm)	21.2	20.5	19.0	19.0	18.9	19.0	19.0	19.0	18.0	19.0	18.0	18.0	18.0	18.0	16.8
Run time (hours)	24.0	24.0	24.0	23.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-4															
Flow rate (gpm)[(b)]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Run time (hours)[(b)]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EW-5															
Flow rate (gpm)	19.5	9.8	20.0	20.1	19.5	19.3	19.2	19.0	19.0	19.0	19.2	19.2	19.2	19.2	19.4
Run time (hours)	24.0	24.0	24.0	23.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0

TABLE 6 SUMMARY OF WATER QUALITY INDICATOR PARAMETERS MEASURED IN GROUND-WATER SAMPLES COLLECTED ON 4 AND 12 NOVEMBER 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Well Designation	Slurry Wall	pH	Temperature (°C)	Conductivity (μmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Eh (mV)
Shallow Monitoring Wells							
MW-202A	Outside	5.66	15.68	564	1.93	15[(a)]	110
MW-203	Outside	5.99	13.66	799	8.31	2	111
MW-204	Outside	6.42	10.79	53	11.08	2	155
MW-217B	Inside	6.19	19.12	2,529	1.98	221	-54
MW-218	Outside	7.56	14.43	882	0.88	18	-189
MW-240	Outside	7.84	11.50	144	9.50	0	165
MW-2101	Outside	5.67	14.49	322	5.91	2	224
Deep Monitoring Wells							
MW-219	Outside	6.19	11.23	101	7.59	39	169

(a) YSI water quality meter turbidity probe malfunction. Water was visibly clear at time of sampling.

NOTE: NTU = Nephelometric turbidity unit.

TABLE 7 SUMMARY OF WATER QUALITY INDICATOR PARAMETERS MEASURED IN GROUND-WATER SAMPLES COLLECTED ON 9-12 NOVEMBER 1998 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Well Designation	pH	Temperature (°C)	Conductivity (μmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Eh (mV)
Shallow Monitoring Wells						
MW-224	5.70	11.41	51	11.19	0	149
MW-231B	6.37	10.91	52	10.91	8	113
MW-313	6.94	8.34	170	0.74	1	163
MW-318	6.48	10.82	62	6.56	13	55
MW-332	6.12	12.37	35	8.10	0	180
MW-1104	5.92	14.35	102	0.66	0	187
Deep Monitoring Wells						
MW-105A	6.81	8.08	35	11.27	5	159
MW-205	6.59	9.92	131	3.23	8	243
MW-207A	6.56	8.97	131	0.19	4	106
MW-225A	6.12	8.70	85	7.50	1	242
MW-229A	7.03	9.39	78	7.40	0	169
MW-230A	7.89	8.62	68	0.24	32	-187
MW-231A	6.64	9.27	42	9.62	39	100
MW-303	7.96	8.36	160	0.20	0	-217
MW-305	7.94	9.43	152	0.37	0	177
MW-306	5.74	9.66	48	10.50	0	200
MW-311	7.16	9.22	90	3.10	29	9
MW-319	6.29	9.76	97	5.58	8	99
MW-330	8.79	9.43	91	2.67	211	-146
MW-331	6.31	9.00	866	0.72	0	201
MW-333	7.15	9.65	156	0.36	0	124
MW-334	8.26	8.68	148	8.82	233	-132
MW-NASB-212	6.70	9.69	137	0.19	4	13
Bedrock Monitoring Wells						
MW-308	7.67	9.93	636	0.22	46	3
MW-309B	8.66	9.13	197	0.11	8	-33
Shallow P-Series Piezometers						
P-111	6.92	9.98	102	7.77	214	-20
P-132	5.81	11.22	24	10.79	0	204
Deep P-Series Piezometers						
P-106	7.21	8.58	97	3.59	3	99

NOTE: NTU = Nephelometric turbidity unit.

TABLE 8 SUMMARY OF WATER QUALITY INDICATOR PARAMETERS MEASURED IN SURFACE WATER AND SEEP SAMPLES COLLECTED ON 5 NOVEMBER 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Sample Designation	pH	Temperature (°C)	Conductivity (μmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Eh (mV)
Surface Water						
SW- 04	6.67	7.47	92	13.39	66	105
SW-07	6.79	7.45	93	13.16	36	119
SW-08	6.82	7.35	91	12.11	19	122
SW-09	6.88	7.09	91	12.47	127	128
SW-15[a]	No data					
SW-16[a]	No data					
Seeps						
SEEP-01	6.32	8.47	517	11.15	1,793	129
SEEP-03	No sample; insufficient water					
SEEP-04	6.38	9.65	793	11.10	1,105	135
SEEP-05	6.50	8.15	733	9.32	1,791	96

(a) Locations sampled under separate surface water program; water quality indicator parameters not collected.

NOTE: NTU = Nephelometric turbidity unit.

TABLE 9 SUMMARY OF WATER QUALITY INDICATOR PARAMETERS MEASURED IN SURFACE WATER COLLECTED ON 5 NOVEMBER 1998 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Sample Designation	pH	Temperature (°C)	Conductivity (μmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Eh (mV)
Surface Water						
SW-10	6.77	6.52	89	12.29	5	129
SW-11	6.85	5.96	87	11.86	5	131
SW-12	6.94	5.87	87	14.27	18	120
SW-13	6.73	6.77	83	10.64	10	131
SW-14	6.94	6.64	82	11.39	18	126

NOTE: NTU = Nephelometric turbidity unit.

TABLE 10 SUMMARY OF WATER QUALITY INDICATOR PARAMETERS MEASURED IN WATER SAMPLES COLLECTED FROM EXTRACTION WELLS AND THE TREATMENT PLANT ON 9 NOVEMBER 1998 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Well Designation	pH	Temperature (°C)	Conductivity (μmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Eh (mV)
Extraction Wells						
EW-1	6.86	8.82	122	9.55	114	194
EW-2	6.34	8.33	246	10.45	1	212
EW-2A	6.57	7.80	109	11.27	27	199
EW-3	5.98	8.16	128	9.98	433	211
EW-4	Well offline; no data					
EW-5	6.47	8.23	89	7.74	1	198
Ground-Water Treatment Plant						
Eastern Plume Raw Influent	6.63	11.69	146	11.30	1	255
Combined Effluent	6.79	12.48	153	14.06	3	252

NOTE: NTU = Nephelometric turbidity unit.

TABLE 11 SUMMARY OF ANALYTICAL RESULTS FOR GROUND-WATER SAMPLES COLLECTED ON 4 AND 12 NOVEMBER 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	MW-202A	MW-203	MW-204	MW-217B	MW-218	MW-219	MW-219 DUP	MW-240	MW-2101	QT-001	QT-004	MEG[b]	MCL[c]
Well Description[a]	S/O	S/O	S/O	S/I	D/O	D/O	D/O	S/O	S/O				
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)													
1,1-Dichloroethane	3	1	(<1U)	0.7J	0.8J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	70	---
Total 1,2-Dichloroethene	(<1U)	0.7J	(<1U)	4	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	70	70
Benzene	(<1U)	(<1U)	(<1U)	**7**	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	5
Chlorobenzene	(<1U)	(<1U)	(<1U)	3	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	47	100
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Methylene Chloride	(<1U)	(<1U)	(<1U)	0.6J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	5
Toluene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1,400	1,000
Vinyl Chloride	(<2U)	(<2U)	(<2U)	**71**	(<2U)	(<2U)	(<2U)	(<2U)	(<2U)	(<2U)	(<2U)	0.15	2.0
Total Xylenes	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	600	10,000
1,1,2,2-Tetrachloroethane	42	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	---
Trichloroethene	5	(<1U)	(<1U)	0.6J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	5
1,1,1-Trichloroethane	160	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	200	200
1,2-Dichlorobenzene	(<1U)	(<1U)	(<1U)	240D	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	600	600
1,4-Dichlorobenzene	7	(<1U)	(<1U)	**47**	0.9J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	27	75
Chloroethane	(<2U)	(<2U)	(<2U)	2J	(<2U)	(<2U)	(<2U)	(<2U)	(<2U)	(<2U)	(<2U)	---	---
Tetrachloroethene	3	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
Acetone	3J	(<5U)	(<5U)	4J	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	---	---

(a) S = Shallow; D = Deep; B = Bedrock; I = Inside slurry wall; O = Outside slurry wall.
(b) MEG (Maximum Exposure Guideline) obtained from State of Maine Department of Human Services Revised Maximum Exposure Guidelines, memorandum dated 23 October 1992. Dashes (---) indicate no MEG applicable.
(c) MCL (Maximum Contaminant Level) obtained from 40 CFR Parts 141 and 142 (U.S. EPA 1994). Dashes (---) indicate no MCL applicable.

NOTE: QT = Trip Blank. Samples associated with QT-004 were analyzed under a separate sample delivery group shipped on the same day.
U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit.
Only those analytes detected in at least one of the samples, and the constituents of concern listed in the Draft Long-Term Monitoring Plan (EA 1998), are shown on this table.
Results in bold indicate concentrations above primary Federal MCL and/or State MEG.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.

Analyte	MW-202A	MW-203	MW-204	MW-217B	MW-218	MW-219	MW-219 DUP	MW-240	MW-2101	QT-001	QT-004	MEG[b]	MCL[c]
Well Description[a]	S/O	S/O	S/O	S/I	D/O	D/O	D/O	S/O	S/O				
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L) (Continued)													
1,1-Dichloroethene	0.6J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	7	7
Chloroform	0.6J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	100
1,1,2-Trichloroethane	8	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
1,2-Dichloroethane	(<1U)	(<1U)	(<1U)	**11**	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	5
Total VOC[d]	229	2	0	386	2	0	0	0	0	NA	NA	NA	NA
TARGET ANALYTE ELEMENTS BY EPA SERIES 6000/7000 METHODS (µg/L)													
Aluminum	27.1B*	34.1B*	160	**4,550**	259	611	1,040	518	79.1B*	NR	NR	1,430	50-200[e]
Arsenic	(<1.85U)	1.9B*	(<1.85U)	4.2B*	**153**	(<1.85U)	(<1.85U)	2.1B*	(<1.85U)	NR	NR	---	50
Barium	64.9	48.8	2.7B*	154	3.4B*	6.8	8.5	10.6	56.3	NR	NR	1,500	2,000
Beryllium	(<0.17U)	(<0.17U)	(<0.17U)	0.31B	(<0.17U)	(<01.7U)	(<0.17U)	(<0.17U)	(<0.17U)	NR	NR	---	
Calcium	96,400	148,000	4,060	158,000	16,500	11,600	11,200	17,000	67,000	NR	NR	---	---
Chromium	(<3.37U)	7.9B*	7.7B*	57.4	10.1B*	12.8B*	15.0	10.0B*	9.5B*	NR	NR	100	100
Cobalt	18.6B*	(<2.74U)	(<2.74U)	17.5B*	(<2.74U)	(<2.74U)	2.8B*	(<2.74U)	(<2.74U)	NR	NR	---	---
Copper	2.4B*	3.0B*	(<1.40U)	8.9B*	(<1.40U)	(<1.40U)	3.5B*	(<1.40U)	(<1.40U)	NR	NR	---	1,300[f]
Iron	11,700	66.2	298	22,700	4,270	1,420	2,100	555	48.7B*	NR	NR	---	300[e]
Lead	(<1.31U)	(<1.31U)	(<1.31U)	8.5	(<1.31U)	(<1.31U)	2.0B*	(<1.31U)	(<1.31U)	NR	NR	---	15[f]
Magnesium	14,000	23,800	1,270	56,800	8,580	4,100	4,110	2,090	6,890	NR	NR	---	---
Manganese	**1,520**	7.8	9.5	**3,860**	**928**	19.3	30.1	31.8	26.4	NR	NR	200	50[e]
Mercury	0.07B*	0.07B*	0.06B*	0.12B*	0.07B*	0.07B*	0.07B*	0.07B*	0.08B*	NR	NR	2	2
Nickel	**132**	8.9B*	(<5.78U)	51.9	7.0B*	12.4B*	6.0B*	(<5.78U)	12.2B*	NR	NR	100	100
Potassium	7,600	4,900	719B*	7,640	7,210	1,380	1,480	4,280	5,240	NR	NR	---	---
Sodium	17,000	20,000	4,820	291,000	164,000	7,730	7,340	8,120	6,050	NR	NR	---	---
Vanadium	(<3.24U)	(<3.24U)	(<3.24U)	11.9B*	(<3.24U)	(<3.24U)	4.7B*	6.3B*	(<3.24U)	NR	NR	---	---
Zinc	6.0B*	2.0B*	2.8B*	20.6B*	3.4B*	5.6B*	7.4B*	6.1B*	3.9B*	NR	NR	---	5,000[e]

(d) Total volatile organic compound calculation does not include common laboratory contaminants such as methylene chloride and acetone. Values are rounded to closest whole number.
(e) Secondary MCL, based on taste, odor, or color.
(f) Action level.

NOTE: NA = Not applicable.
B* = Analyte concentration is between the Instrument Detection Limit and the Contract Required Detection Limit.
NR = Analysis not required in Draft Long-Term Monitoring Plan (EA 1998).

TABLE 12 SUMMARY OF ANALYTICAL RESULTS FOR GROUND-WATER SAMPLES COLLECTED ON 9-12 NOVEMBER 1998 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	MW-105A	MW-205	MW-207A	MW-224	MW-225A	MW-229A	MW-230A	MW-230A DUP	MW-231A	MW-231B	MEG[b]	MCL[c]
Well Depth[a]	D	D	D	S	D	D	D	D	D	S		
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)												
1,1,1-Trichloroethane	1	**260D**	24	(<1U)	(<1U)	50	(<1U)	(<1U)	(<1U)	(<1U)	200	200
Total 1,2-Dichloroethene	(<1U)	19	14	(<1U)	2	8	(<1U)	(<1U)	(<1U)	(<1U)	70	70
Methylene Chloride	(<1U)	1B	(<1U)	**9B**	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	5
Trichloroethene	(<1U)	**150**	**42**	(<1U)	2	**41**	(<1U)	(<1U)	(<1U)	(<1U)	5	5
Tetrachloroethene	(<1U)	**13**	**48**	(<1U)	0.6J	**5**	(<1U)	(<1U)	(<1U)	(<1U)	3	5
1,1-Dichloroethene	(<1U)	**24**	2	(<1U)	(<1U)	3	(<1U)	(<1U)	(<1U)	(<1U)	7	7
1,1-Dichloroethane	(<1U)	0.8J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	70	---
Total Xylenes	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	600	10,000
1,1,2-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Chloroform	(<1U)	0.5J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	100
Toluene	(<1U)	(<1U)	(<1U)	0.7J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1,400	1,000
Benzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	5
1,2-Dichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	5
1,4-Dicholorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	27	75
Acetone	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	---	---
Total VOC[d]	1	467	130	0	3	107	0	0	0	0	NA	NA

(a) D = Deep; S = Shallow; B = Bedrock.
(b) MEG (Maximum Exposure Guideline) obtained from State of Maine Department of Human Services Revised Maximum Exposure Guidelines, memorandum dated 23 October 1992. Dashes (---) indicate no MEG applicable.
(c) MCL (Maximum Contaminant Level) obtained from 40 CFR Parts 141 and 142 (U.S. EPA 1994). Dashes (---) indicate no MCL applicable.
(d) Total volatile organic compound calculation does not include common laboratory contaminants such as methylene chloride and acetone. Values are rounded to closest whole number.

NOTE: D = Analysis at a secondary dilution factor.
U = Not detected. Sample quantitation limits are shown as (<____U).
B = Compound detected in associated method blank.
J = Estimated concentration below detection limit.
NA = Not applicable.
Only those analytes detected in at least one of the samples, and the constituents of concern listed in the Draft Long-Term Monitoring Plan (EA 1998), are shown on this table.
Results in bold indicate concentrations above Federal MCL and/or State MEG.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.

Analyte	MW-303	MW-305	MW-306	MW-308	MW-309B	MW-311	MW-311 DUP	MW-313	MW-318	MW-319	MW-330	MW-331	MEG[b]	MCL[c]
Well Depth[a]	D	D	D	B	B	D	D	S	S	D	D	D		
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)														
1,1,1-Trichloroethane	(<1U)	(<1U)	18	(<1U)	(<1U)	**3,000D**	**3,400D**	(<1U)	(<1U)	5	(<1U)	**1,000D**	200	200
Total 1,2-Dichloroethene	(<1U)	(<1U)	4	(<1U)	(<1U)	11	11	(<1U)	(<1U)	21	(<1U)	11	70	70
Methylene Chloride	0.5JB	2B	3B	(<1U)	(<1U)	3B	3B	(<1U)	(<1U)	2B	(<1U)	**6B**	---	5
Trichloroethene	1	(<1U)	**10**	1	(<1U)	**780D**	**900D**	1	(<1U)	**18B**	(<1U)	**370D**	5	5
Tetrachloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**20**	**19**	(<1U)	(<1U)	**23**	(<1U)	**12**	3	5
1,1-Dichloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**380D**	**450D**	(<1U)	(<1U)	(<1U)	(<1U)	**110**	7	7
1,1-Dichloroethane	(<1U)	(<1U)	2	(<1U)	(<1U)	70	**73**	0.6J	(<1U)	(<1U)	(<1U)	34	70	---
Total Xylenes	(<1U)	(<1U)	1	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	600	10,000
1,1,2-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**4**	**4**	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Chloroform	(<1U)	(<1U)	0.8J	(<1U)	(<1U)	2	2	(<1U)	(<1U)	(<1U)	0.5J	0.5J	---	100
Toluene	(<1U)	(<1U)	0.8J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1,400	1,000
Benzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	2	2	(<1U)	(<1U)	(<1U)	(<1U)	0.7J	5	5
1,2-Dichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**9**	**9**	(<1U)	(<1U)	(<1U)	(<1U)	2	5	5
1,4-Dichlorobenzene	(<1U)	(<1U)	(<1U)	0.5J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	27	75
Acetone	3J	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	---	---
Total VOC[d]	1	0	37	1	0	4,278	4,870	1	0	67	1	1,540	NA	NA

Analyte	MW-332	MW-332 DUP	MW-333	MW-334	MW-1104	MW-1104 DUP	MW-NASB-212	P-106	P-111	P-132	QT-003	QT-004	MEG[b]	MCL[c]
Well/Piezometer Depth[a]	S	S	D	D	S	S	D	D	S	S				
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)														
1,1,1-Trichloroethane	92	96	(<1U)	(<1U)	1	2	(<1U)	**2,900D**	(<1U)	(<1U)	(<1U)	(<1U)	200	200
Total 1,2-Dichloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	2	17	(<1U)	(<1U)	(<1U)	(<1U)	70	70
Methylene Chloride	0.6JB	0.8JB	(<1U)	(<1U)	2B	2B	2B	2B	(<1U)	2B	3B	(<1U)	---	5
Trichloroethene	**25**	**26**	(<1U)	(<1U)	(<1U)	(<1U)	**20B**	**890D**	(<1U)	(<1U)	1B	(<1U)	5	5
Tetrachloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1	**15**	(<1U)	(<1U)	(<1U)	(<1U)	3	5
1,1-Dichloroethene	**8**	**8**	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**340D**	(<1U)	(<1U)	(<1U)	(<1U)	7	7
1,1-Dichloroethane	1	0.9J	1	(<1U)	(<1U)	(<1U)	(<1U)	52	(<1U)	(<1U)	(<1U)	(<1U)	70	---
Total Xylenes	(<1U)	(<1U)	(<1U)	(<1U)	0.9J	7	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	600	10,000
1,1,2-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**3**	(<1U)	(<1U)	(<1U)	(<1U)	3	5
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Chloroform	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	100
Toluene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1,400	1,000
Benzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	2	(<1U)	(<1U)	(<1U)	(<1U)	5	5
1,2-Dichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	4	(<1U)	(<1U)	(<1U)	(<1U)	5	5
1,4-Dichlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	27	75
Acetone	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	3J	(<5U)	(<5U)	(<5U)	3J	(<5U)	---	---
Total VOC[d]	126	140	1	0	2	10	23	4,223	0	0	NA	NA	NA	NA

NOTE: QT = Trip blank.

TABLE 13 ANALYTICAL RESULTS FOR DIRECT-PUSH SAMPLING CONDUCTED ON 15, 16, AND 28 OCTOBER 1998 NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	DP-EP-01 (11-15 ft bgs; 12.5 to 8.5 MSL)	DP-EP-01 (39-43 ft bgs; -15.5 to -19.5 MSL)	DP-EP-02 (33-37 ft bgs; -8.6 to -12.6 MSL)	DP-EP-02 DUP (33-37 ft bgs; -8.6 to -12.6 MSL)	DP-EP-03 (78-81 ft bgs; -51.7 to -54.7 MSL)	DP-EP-04 (11-15 ft bgs; 17.1 to 13.1 MSL)	DP-EP-04 (37-41 ft bgs; -8.9 to -12.9 MSL)	MEG[a]	MCL[b]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)									
1,1,1-Trichloroethane	(<5U)	5J	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	200	200
1,1,2,2-Tetrachloroethane	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	---	---
1,1,2-Trichloroethane	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	3	5
1,1-Dichloroethane	(<5U)	7	(<5U)	2J	(<5U)	(<5U)	(<5U)	70	---
1,1-Dichloroethene	(<5U)	5	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	7	7
1,2-Dichloroethane	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	5	5
Acetone	(<10U)	(<10U)	(<10U)	(<10U)	(<10U)	(<10U)	(<10U)	---	---
Benzene	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	5	5
Carbon Disulfide	(<5U)	(<5U)	(<5U)	(<5U)	1J	(<5U)	2J	---	---
Chloroform	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	---	100
Ethylbenzene	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	700	700
Methylene Chloride	(<5U)	2J	3J	(<5U)	(<5U)	(<5U)	(<5U)	---	5
Tetrachloroethene	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	3	5
Toluene	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	1,400	1,000
Total 1,2-Dichloroethene	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	70	70
Total Xylenes	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	600	10,000
Trichloroethene	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	5	5
Total VOC[c]	0	17	0	2	1	0	2	NA	NA

(a) Maximum Exposure Guideline (MEG) obtained from State of Maine Department of Human Services, Revised Maximum Exposure Guidelines, memorandum dated 23 October 1992. Dashes (---) indicate no MEG applicable.

(b) Maximum Contaminant Level (MCL) obtained from 40 CFR Parts 141 and 142 (U.S. EPA 1994). Dashes (---) indicate no MCL applicable.

(c) Total volatile organic compound calculation does not include common laboratory contaminants such as methylene chloride and acetone. Values are rounded to closest whole number.

NOTE: bgs = Below ground surface; MSL = Mean sea level.
U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit; DUP indicates duplicate sample.
Only those analytes detected in at least one of the samples, and the contaminants of concern listed in the Draft Long-Term Monitoring Plan (EA 1998), are shown on this table.
Results in bold indicate concentrations above primary Federal MCL and/or State MEG. Trip blank QT-001 (16 October 1998) contained 3J µg/L of acetone; no volatile organic compounds were detected in trip blank QT-002 (28 October 1998).

Analyte	DP-EP-05 (22-26 ft bgs; -12.1 to -16.1 MSL)	DP-EP-06 (3-7 ft bgs; 10.7 to 6.7 MSL)	DP-EP-06 (39-43 ft bgs; -25.3 to -29.3 MSL)	DP-EP-07 (12-16 ft bgs; -1.0 to -5.0 MSL)	DP-EP-07 DUP (12-16 ft bgs; -1.0 to -5.0 MSL)	DP-EP-07 (38-42 ft bgs; -27.0 to -31.0 MSL)	DP-EP-07 (51-55 ft bgs; -40.0 to -44.0 MSL)	MEG[b]	MCL[c]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)									
1,1,1-Trichloroethane	**3,000D**	(<1U)	**1,300D**	(<1U)	(<1U)	**2,600D**	(<1U)	200	200
1,1,2,2-Tetrachloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	---
1,1,2-Trichloroethane	**4**	(<1U)	2	(<1U)	(<1U)	3	(<1U)	3	5
1,1-Dichloroethane	43E	(<1U)	26	(<1U)	(<1U)	53	(<1U)	70	---
1,1-Dichloroethene	**270D**	(<1U)	**180**	(<1U)	(<1U)	**240D**	(<1U)	7	7
1,2-Dichloroethane	**8**	(<1U)	4	(<1U)	(<1U)	4	(<1U)	5	5
Acetone	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	---	---
Benzene	1	(<1U)	(<1U)	(<1U)	(<1U)	2	(<1U)	5	5
Carbon Disulfide	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	---
Chloroform	2	(<1U)	(<1U)	(<1U)	(<1U)	1	(<1U)	---	100
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Methylene Chloride	**22**	(<1U)	**6**	(<1U)	(<1U)	**12**	(<1U)	---	5
Tetrachloroethene	**14**	(<1U)	**5**	(<1U)	(<1U)	**21**	(<1U)	3	5
Toluene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1,400	10,000
Total 1,2-Dichloroethene	11	(<1U)	(<1U)	(<1U)	(<1U)	17	(<1U)	70	70
Total Xylenes	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	600	100
Trichloroethene	**480D**	(<1U)	**160**	(<1U)	(<1U)	**720D**	(<1U)	5	5
Total VOC[c]	3,833	0	1,677	0	0	3,661	0	NA	NA

NOTE: D = Analysis at a secondary dilution factor.
E = Compound concentration exceeds calibration range.

TABLE 14 SUMMARY OF ANALYTICAL RESULTS FOR WATER SAMPLES COLLECTED ON 9 NOVEMBER 1998 FROM THE GROUND-WATER EXTRACTION WELLS AND TREATMENT SYSTEM NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	EW-01	EW-02	EW-02A	EW-03	EW-05	QT-003
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)						
Benzene	(<1U)	(<1U)	1	(<1U)	0.5J	(<1U)
1,1-Dichloroethane	2	0.6J	44	(<1U)	21	(<1U)
1,1-Dichloroethene	6	2	200D	(<1U)	26	(<1U)
Total 1,2-Dichloroethene	16	6	11	24	13	(<1U)
Tetrachloroethene	8	19	18	15	1	(<1U)
1,1,1-Trichloroethane	48	17	1,800D	0.9J	170D	(<1U)
Trichloroethene	46B	11	530D	11B	86B	1B
Methylene Chloride	4B	(<1U)	12B	3B	2B	3B
1,2-Dichloroethane	(<1U)	(<1U)	4	(<1U)	(<1U)	(<1U)
1,1,2-Trichloroethane	(<1U)	(<1U)	3	(<1U)	(<1U)	(<1U)
Acetone	8	(<5U)	(<5U)	(<5U)	(<5U)	3J
Chloroform	(<1U)	(<1U)	1	(<1U)	(<1U)	(<1U)
Total VOC[a]	126	56	2,612	54	318	NA

Analyte	Eastern Plume Influent	Combined Effluent	Combined Effluent DUP	Discharge Limit[b]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)				
Benzene	(<1U)	(<1U)	(<1U)	---
1,1-Dichloroethane	15	3	2	94
1,1-Dichloroethene	52	0.6J	(<1U)	7
Total 1,2-Dichloroethene	15	(<1U)	(<1U)	70
Tetrachloroethene	15	(<1U)	(<1U)	5
1,1,1-Trichloroethane	370D	300D	340D	750
Trichloroethene	170B	2B	(<1U)	5
Methylene chloride	3B	1B	0.9JB	5
1,2-Dichloroethane	1	(<1U)	(<1U)	---
1,1,2-Trichloroethane	0.6J	(<1U)	(<1U)	5
Acetone	(<5)	4J	(<1U)	---
Chloroform	(<1U)	(<1U)	(<1U)	---

(a) Total volatile organic compound calculation does not include common laboratory contaminants such as methylene chloride and acetone. Values are rounded to closest whole number.

(b) Ground-water treatment plant discharge limits taken from *Agreement to Accept Treated Ground Water,* dated December 1994, and prepared by the Brunswick Municipal Sewer District.

NOTE: QT = Trip blank. Samples associated with QT-003 were analyzed under a separate sample delivery group shipped on the same day.
U = Not detected. Sample quantitation limits are shown as (<____U).
B = Analyte detected in associated method blank.
J = Estimated concentration below detection limit.
D = Analysis at a secondary dilution factor.
NA = Not applicable.
Only those analytes detected in at least one of the samples, and the constituents of concern listed in the Long-Term Monitoring Plan (EA 1998a), are shown on this table.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.
Dashes (---) indicate no discharge limit applicable to this compound/analyte.

TABLE 15 SUMMARY OF ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES COLLECTED ON 5 NOVEMBER 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	SW-04	SW-07	SW-08	SW-08 DUP	SW-09	SW-15[a]	SW-16[a]	QT-002	QS-001	QD-001
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)										
Chloroform	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	NR	NR	(<1U)	13	14
Carbon Disulfide	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	NR	NR	0.5J	(<1U)	(<1U)
Total Xylenes	0.5J	(<1U)	(<1U)	(<1U)	(<1U)	NR	NR	1	(<1U)	(<1U)
Tetrachloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	NR	NR	1	(<1U)	(<1U)
Trichloroethene	1B	(<1U)	0.7JB	(<1U)	0.8J	NR	NR	2B	(<1U)	(<1U)
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	NR	NR	0.6J	(<1U)	(<1U)
Acetone	4J	(<5U)	3J	(<5U)	(<1U)	NR	NR	4J	3JB	(<5U)
1,2-Dichlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	NR	NR	2	(<1U)	(<1U)
1,3-Dichlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	NR	NR	0.9J	(<1U)	(<1U)
1,4-Dichlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	NR	NR	1	(<1U)	(<1U)
Methylene chloride	10B	(<1U)	6B	7B	6B	NR	NR	0.9JB	4B	5B
TARGET ANALYTE LIST ELEMENTS BY EPA 6000/7000/9000 SERIES METHODS (µg/L)										
Aluminum	121	124	220	230	118	170	180	NR	(<19.75U)	(<19.75U)
Barium	21.0	21.4	22.1	21.8	20.1	22	23	NR	0.40B*	1.0B*
Calcium	7,980	8,420	8,090	7,920	7,900	8,600	8,800	NR	(<11.89U)	27.3B*
Chromium	1.7B*	0.79B*	1.2B*	0.99B*	0.71B*	(<10U)	(<10U)	NR	(<0.63U)	0.68B*
Copper	(<0.69U)	(<0.69U)	(<0.69U)	(<0.69U)	(<0.69U)	(<10U)	(<10U)	NR	(<0.69U)	(<0.69U)
Iron	935	1,280	1,540	1,460	1,120	530	1,200	NR	29.8B*	47.1
Lead	4.2B*	4.0B*	4.0B*	4.0B*	2.9B*	(<0.2U)	2.3	NR	3.0B*	2.7B*
Magnesium	1,720	1,840	1,800	1,760	1,750	2,100	2,200	NR	(<12.17U)	(<12.17U)
Manganese	201	237	251	244	230	83	210	NR	0.37B*	0.61B*
Mercury	0.06B*	0.04B*	0.03B*	0.05B*	0.04B*	(<0.2U)	(<0.2U)	NR	0.04B*	(<0.01U)
Nickel	0.88B*	(<0.77U)	1.1B*	(<0.77U)	0.94B*	(<10U)	(<10U)	NR	(<0.77U)	(<0.77U)
Potassium	1,840	2,050	1,620	1,770	2,030	1,900	1,900	NR	(<435.16U)	(<435.16U)
Sodium	11,700	11,800	11,600	11,500	11,400	14,000	12,000	NR	209	202
Vanadium	0.78B*	0.54B*	1.5B*	1.2B*	0.72B*	(<10U)	(<10U)	NR	(<0.46U)	(<0.46U)
Zinc	5.4B*	4.9B*	11.9B*	6.8B*	5.2B*	15	140	NR	3.3B*	3.2B*

(a) Samples were taken by Naval Air Station, Brunswick personnel during a separate sampling event.

NOTE: QT = Trip blank. Samples associated with QT-002 were analyzed with a separate sample delivery group shipped on the same day.
QS = Equipment rinsate blank.
QD = Source water blank.
U = Not detected. Sample quantitation limits are shown as (<__U).
J = Estimated concentration below detection limit.
B = Analyte detected in associated method blank.
B* = Analyte concentration is between the Instrument Limits and the Contract Required Detection Limit.
NR = Analysis not required.
Only those analytes detected in at least one of the samples, and constituents of concern listed in the Draft Long-Term Monitoring Plan (EA 1998), are shown on this table.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.

TABLE 16 SUMMARY OF ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES COLLECTED ON 5 NOVEMBER 1998 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	SW-10	SW-11	SW-12	SW-13	SW-13 DUP	SW-14	QT-002	QS-003	QD-001
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)									
Chloroform	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	11	14
Methylene Chloride	0.5JB	(<1U)	(<1U)	(<1U)	(<1U)	2B	0.9JB	4B	5B
Trichloroethene	1B	2B	3B	2B	2B	3B	2B	4B	(<1U)
Tetrachloroethane	(<1U)	(<1U)	0.6J	(<1U)	(<1U)	0.5J	1	(<1U)	(<1U)
Ethylbenzene	(<1U)	(<1U)	0.9J	(<1U)	(<1U)	0.6J	0.6J	(<1U)	(<1U)
Total Xylenes	(<1U)	(<1U)	5	(<1U)	(<1U)	1	1	(<1U)	(<1U)
Carbon Disulfide	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	0.6J	0.5J	(<1U)	(<1U)
Toluene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	0.7J	(<1U)	(<1U)	(<1U)
1,2-Dichlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1	2	(<1U)	(<1U)
1,3-Dichlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1	0.9J	(<1U)	(<1U)
1,4-Dichlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1	1	(<1U)	(<1U)
Acetone	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	4J	(<5U)	(<5U)

NOTE: QT = Trip blank.
QS = Equipment rinsate blank.
QD = Source water blank. Samples associated with QD-001 were analyzed under a separate sample delivery group shipped on the same day.
U = Not detected. Sample quantitation limits are shown as (<____U).
B = Analyte detected in associated method blank.
J = Estimated concentration below detection limit.
Only those analytes detected in at least one of the samples, and constituents of concern listed in the Draft Long-Term Monitoring Plan (EA 1998), are shown on this table.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.

TABLE 17 SUMMARY OF ANALYTICAL RESULTS FOR LEACHATE STATION SEEP SAMPLES COLLECTED ON 5 NOVEMBER 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	SEEP-01	SEEP-01 DUP	SEEP-04	SEEP-05	QT-002	QS-001	QD-001
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/L)							
1,1-Dichloroethane	1	1	15	0.6J	(<1U)	(<1U)	(<1U)
Trichloroethene	(<1U)	(<1U)	3	(<1U)	2B	(<1U)	(<1U)
1,1,2,2-Tetrachloroethane	4	4	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	0.6J	(<1U)	(<1U)
Total Xylenes	(<1U)	(<1U)	(<1U)	(<1U)	1	(<1U)	(<1U)
Methylene Chloride	(<1U)	(<1U)	(<1U)	(<1U)	0.9JB	4B	5B
1,1,1-Trichloroethane	5	6	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
1,2-Dichlorobenzene	(<1U)	(<1U)	1	0.8J	2	(<1U)	(<1U)
1,3-Dichlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	0.9J	(<1U)	(<1U)
1,4-Dichlorobenzene	(<1U)	(<1U)	1	0.9J	1	(<1U)	(<1U)
Chlorobenzene	(<1U)	(<1U)	0.6J	(<1U)	(<1U)	(<1U)	(<1U)
Acetone	(<5U)	(<5U)	3JB	4JB	4J	3JB	(<5U)
Carbon Disulfide	(<1U)	(<1U)	(<1U)	(<1U)	0.5J	(<1U)	(<1U)
Tetrachloroethene	(<1U)	(<1U)	(<1U)	(<1U)	1	(<1U)	(<1U)
Vinyl Chloride	(<2U)	(<2U)	11	(<2U)	(<2U)	(<2U)	(<2U)
Total 1,2-Dichloroethene	(<1U)	(<1U)	30	(<1U)	(<1U)	(<1U)	(<1U)
Chloroform	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	13	14

NOTE: QT = Trip blank. Samples associated with QT-002 were analyzed under a separate sample delivery group shipped on the same day.
QS = Equipment rinsate blank.
QD = Source water blank.
U = Not detected. Sample quantitation limits are shown as (<___U).
B = Compound detected in associated method blank.
J = Estimated concentration below detection limit.
SEEP-2 was dry, therefore, no aqueous sample was collected.
Only those analytes detected in at least one of the samples and the constituents of concern listed in the Draft Long-Term Monitoring Plan (EA 1998) are shown on this table.

Analyte	SEEP-01	SEEP-01 DUP	SEEP-04	SEEP-05	QT-002	QS-001	QD-001
TARGET ANALYTE LIST ELEMENTS BY EPA SERIES 6000/7000 METHODS (µg/L)							
Aluminum	14,000	7,220	599	23,400	NR	(<19.75U)	(<19.75U)
Antimony	(<1.98U)	(<1.98U)	(<9.90U)	(<9.90U)	NR	(<1.98U)	(<1.98U)
Arsenic	49.5	28.9	95.9	7,550	NR	(<1.85U)	(<1.85U)
Barium	988	950	544	530	NR	0.40B*	1.0B*
Beryllium	7.0	4.4B*	(<0.17U)	0.61B*	NR	(<0.18U)	(<0.18U)
Cadmium	3.9B*	3.0B*	(<1.25U)	(<1.25U)	NR	(<0.25U)	(<0.25U)
Calcium	186,000	161,000	150,000	135,000	NR	(<11.89U)	27.3B*
Chromium	24.7	13.7B*	4.3B*	48.3	NR	(<0.63U)	0.68B*
Cobalt	224	129	55.6	68.9	NR	(<0.82U)	(<0.82U)
Copper	45.6	30.4	(<3.45U)	10.3B*	NR	(<0.69U)	(<0.69U)
Iron	376,000	19,700	1,080,000	1,990,000	NR	29.8B*	47.1B*
Lead	99.7	61.0	(<6.55U)	76.9	NR	3.0B*	2.7B*
Magnesium	15,500	13,100	22,100	40,500	NR	(<12.17U)	(<12.17U)
Manganese	3,600	1,870	5,310	7,620	NR	0.37B*	0.61B*
Mercury	1.7	1.1	0.26	0.44	NR	0.04B*	(<0.01U)
Nickel	169	122	14.6B*	55.5	NR	(<0.77U)	(<0.77U)
Potassium	4,370	3,670	9,970	7,630	NR	(<435.16U)	(<435.16U)
Selenium	15.3	7.9B*	17.4B*	47.3B*	NR	(<3.19U)	(<3.19U)
Silver	1.9B*	3.8B*	2.5B*	3.7B*	NR	(<2.66U)	(<2.66U)
Sodium	15,000	14,200	52,700	40,500	NR	209	202
Thallium	(<3.22U)	(<3.22U)	(<16.10U)	35.9B*	NR	(<3.22U)	(<3.22U)
Vanadium	105	67.6	13.2B*	98.9B*	NR	(<0.46U)	(<0.46U)
Zinc	237	177	62.2B*	246	NR	3.3B*	3.2B*

NOTE: B* = Analyte concentration is between the Instrument Detection Limit and the Contract Required Detection Limit.
NR = Analysis not required.

TABLE 18 SUMMARY OF ANALYTICAL RESULTS FOR LEACHATE STATION SEDIMENT SAMPLES COLLECTED ON 5 NOVEMBER 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	LT-1	LT-1 DUP	LT-3	LT-4	LT-5[a]	QT-002 (µg/L)	QS-002 (µg/L)	QD-001 (µg/L)
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (µg/kg)								
Methylene chloride	150	160	340	57	68	0.9JB	4B	5B
1,1-Dichloroethane	57	39	280	12	(<5U)	(<1U)	(<1U)	(<1U)
Total 1,2-dichloroethene	(<6U)	(<6U)	(<8U)	21	(<5U)	(<1U)	(<1U)	(<1U)
1,2-Dichlorobenzene	(<6U)	(<6U)	110	(<4U)	120	2	(<1U)	(<1U)
1,3-Dichlorobenzene	(<6U)	(<6U)	21	(<4U)	(<5U)	0.9J	(<1U)	(<1U)
1,4-Dichlorobenzene	17	(<6U)	250	12	110	1	(<1U)	(<1U)
Ethylbenzene	(<32U)	(<32U)	(<39U)	(<18U)	(<26U)	0.6J	(<1U)	(<1U)
Total xylenes	(<32U)	(<32U)	(<39U)	(<18U)	(<26U)	1	(<1U)	(<1U)
Trichloroethene	(<6U)	(<6U)	35	(<4U)	(<5U)	2B	(<1U)	(<1U)
1,1,2,2-Tetrachloroethane	(<6U)	57	950	(<4U)	(<5U)	(<1U)	(<1U)	(<1U)
Acetone	3,300D	160	2,200D	820D	530	4J	(<5U)	(<5U)
Vinyl Chloride	(<13U)	(<13U)	(<16U)	(<7U)	(<10U)	(<2U)	(<2U)	(<2U)
Chloroform	(<6U)	(<6U)	(<8U)	(<4U)	(<5U)	(<1U)	12	14
1,1,1-Trichloroethane	(<6U)	(<6U)	600	(<4U)	(<5U)	(<1U)	(<1U)	(<1U)
Tetrachloroethene	(<6U)	(<6U)	77	(<4U)	(<5U)	1	(<1U)	(<1U)
Chlorobenzene	(<6U)	(<6U)	32	(<4U)	(<5U)	(<1U)	(<1U)	(<1U)
Carbon Disulfide	(<6U)	(<6U)	(<8U)	(<4U)	14	0.5J	(<1U)	(<1U)
1,1,2-Trichloroethane	(<6U)	18	64	(<4U)	(<5U)	(<1U)	(<1U)	(<1U)
2-Butanone	120	(<32U)	270	180	120	(<5U)	(<5U)	(<5U)

(a) Reanalysis due to low surrogate recovery.

NOTE: QT = Trip blank. Samples associated with QT-002 were analyzed under a separate sample delivery group shipped on the same day.
QS = Equipment rinsate blank. Samples associated with QS-002 were analyzed under a separate sample delivery group shipped on the same day.
QD = Source water blank. Samples associated with QD-001 were analyzed under a separate sample delivery group shipped on the same day.
J = Estimated concentration below detection limit.
B = Compound detected in associated method blank.
U = Not detected. Sample quantitation limits are shown as (<____U).
D = Analysis at a secondary dilution factor.
Only those analytes detected in at least one of the samples, and constituents of concern listed in the Draft Long-Term Monitoring Plan (EA 1998), are shown on this table.

Analyte	LT-1	LT-1 DUP	LT-3	LT-4	LT-5[a]	QT-002 (µg/L)	QS-002 (µg/L)	QD-001 (µg/L)
TARGET ANALYTE LIST ELEMENTS BY EPA SERIES 6000/7000 METHODS (mg/kg)								
Aluminum	909	3,510	5,260	322	2,650	NR	(<19.75U)	(<19.75U)
Antimony	(<1.24U)	(<1.28U)	(<1.49U)	(<3.64U)	(<0.80U)	NR	(<1.98U)	(<1.98U)
Arsenic	14.2	12.3	16.6	64.5	1,690	NR	(<1.85U)	(<1.85U)
Barium	166	106	52.0	69.2	50.5	NR	1.9B*	1.0B*
Beryllium	1.1B*	1.4B*	2.0B*	0.11B*	0.21B*	NR	(<0.18U)	(<0.18U)
Cadmium	(<0.78U)	3.6B*	16.0	(<0.46U)	(<0.50U)	NR	(<0.25U)	(<0.25U)
Calcium	10,800	13,500	12,100	4,460	4,530	NR	19.6B*	27.3B*
Chromium	4.3B*	7.9B*	71.0	3.7B*	6.9B*	NR	0.80B*	0.68B*
Cobalt	86.8	170	17.2B*	10.3B*	6.3B*	NR	(<0.82U)	(<0.82U)
Copper	0.64B*	12.1B*	13.1B*	(<1.27U)	(<0.28U)	NR	(<0.69U)	(<0.69U)
Iron	483,000	102,000	70,800	475,000	331,000	NR	40.7B*	47.1B*
Lead	(<0.82U)	23.2	55.4	3.7B*	4.9	NR	3.0B*	2.7B*
Magnesium	687	1,390	1,440	319	1,300	NR	(<12.17U)	(<12.17U)
Manganese	3,610	4,320	1,430	464	703	NR	0.44B*	0.61B*
Mercury	0.17	0.56	1.7	0.17	0.05B*	NR	0.04B*	(<0.01U)
Nickel	46.3	56.9	30.2	2.8B*	5.4B*	NR	(<0.77U)	(<0.77U)
Potassium	561B*	900	728B*	273B*	620	NR	(<435.16U)	(<435.16U)
Selenium	37.8	5.4B*	6.9B*	(<5.86U)	27.3	NR	(<3.19U)	(<3.19U)
Silver	1.2B*	4.4B*	2.8B*	0.53B*	0.51B*	NR	(<2.66U)	(<2.66U)
Sodium	161	192	367	232	324	NR	166	202
Thallium	20.8	(<2.08U)	(<2.42U)	(<5.92U)	17.4	NR	(<3.22U)	(<3.22U)
Vanadium	5.2B*	22.0	30.9	6.6B*	8.9B*	NR	0.50B*	(<0.46U)
Zinc	102	52.8	23.5	16.9B*	16.6	NR	2.3B*	3.2B*

NOTE: B* = Analyte concentration is between the Instrument Detection Limit and the Contract Required Detection Limit.
NR = Analysis not required.

TABLE 19 SUMMARY OF LANDFILL GAS MONITORING CONDUCTED ON 24 NOVEMBER 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Gas Vent Designation	Depth to Bottom (ft)	Pressure (in. H_g)	Percent Methane	Percent Oxygen	Percent Carbon Dioxide
Gas Probes					
GP-04	7.26	29.7	0.0	8.8	1.2
GP-05	7.21	29.6	0.0	9.1	3.6
GP-06	7.22	29.7	0.0	10.5	0.6
Gas Vents					
GV-01	6.72	29.6	0.0	21.1	0.0
GV-02	4.76	29.6	0.0	21.1	0.0
GV-03	4.52	29.6	0.1	21.3	0.0
GV-04	4.47	29.6	0.0	21.3	0.0
GV-05	4.52	29.6	0.0	21.4	0.0
GV-06	4.59	29.6	0.0	22.0	0.0
GV-07	4.63	29.6	0.0	22.1	0.0
GV-08	4.57	29.6	0.0	21.5	0.0
GV-09	4.59	29.6	0.1	21.5	0.0
GV-10	4.60	29.7	0.0	21.5	0.0
GV-11	4.54	29.6	0.0	21.5	0.0
GV-12	4.56	29.6	0.0	21.5	0.0
GV-13	4.56	29.7	0.0	21.5	0.0
GV-14	4.56	29.7	0.0	21.5	0.0

NOTE: Depth to bottom measured from top of polyvinyl chloride coupling.

TABLE 20 SUMMARY OF ANALYTICAL DATA QUALITY REVIEW

Sample Location	Findings of Laboratory Data Quality Review
	GROUND WATER
MW-1104	Result for methylene chloride is a false-positive.
MW-1104 DUP	Result for methylene chloride is a false-positive.
MW-205	Result for methylene chloride is a false-positive.
MW-219	Results for aluminum, iron, and magnesium are considered estimates of the reported values.
MW-219 DUP	Results for aluminum, iron, and magnesium are considered estimates of the reported values.
MW-224	Result for methylene chloride is a false-positive.
MW-225A	Result for trichloroethene is a false-positive.
MW-303	Results for trichloroethene, acetone, and methylene chloride are false-positives.
MW-305	Result for methylene chloride is a false-positive.
MW-306	Result for methylene chloride is a false-positive.
MW-308	Result for trichloroethene is a false-positive.
MW-311	Result for methylene chloride is a false-positive.
MW-311 DUP	Result for methylene chloride is a false-positive.
MW-313	Result for trichloroethene is a false-positive.
MW-319	Results for trichloroethene and methylene chloride are false-positives.
MW-1104	Result for methylene chloride is a false-positive.
MW-1104 DUP	Result for methylene chloride is a false-positive.
MW-331	Result for methylene chloride is a false-positive.
MW-332	Result for methylene chloride is a false-positive.
MW-332 DUP	Result for methylene chloride is a false-positive.
MW-NASB-212	Results for trichloroethene, acetone, and methylene chloride are false-positives.
P-106	Result for methylene chloride is a false-positive.
P-132	Result for methylene chloride is a false-positive.
	GROUND-WATER DIRECT-PUSH
DP-EP-01 (39-43 ft)	Result for 1,1,1-trichloroethane is a false-positive.
DP-EP-05 (22-26 ft)	Results for trichloroethene and 1,1-dichloroethene should be considered bias low.
	SURFACE WATER
SW-04	Results for total xylene, trichloroethene, acetone, methylene chloride, chromium, lead, mercury, and zinc are false-positives.
SW-07	Results for chromium, lead, mercury, and zinc are false-positives.
SW-08	Results for trichloroethene, acetone, methylene chloride, chromium, lead, mercury, and zinc are false-positives.
SW-08 DUP	Results for methylene chloride, chromium, lead, mercury, and zinc are false-positives.
SW-09	Results for trichloroethene, methylene chloride, chromium, lead, mercury, and zinc are false-positives.
SW-10	Results for trichloroethene and methylene chloride are false-positives.
SW-11	Result for trichloroethene is a false-positive.
SW-12	Results for total xylenes, tetrachloroethene, ethylbenzene, and trichloroethene are false-positives.
SW-13	Result for trichloroethene is a false-positive.
SW-13 DUP	Result for trichloroethene is a false-positive.
SW-14	Results for carbon disulfide, total xylenes, tetrachloroethene, ethylbenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, trichloroethene, and methylene chloride are false-positives.

Sample Location	Findings of Laboratory Data Quality Review
LEACHATE STATION SEEP	
SEEP-01	Results for aluminum, cobalt, iron, manganese, mercury, and zinc are considered estimates of the reported values.
SEEP-01 DUP	Results for aluminum, cobalt, iron, manganese, mercury, and zinc are considered estimates of the reported values.
SEEP-03	Result for trichloroethene is a false-positive.
SEEP-04	Results for 1,2-dichlorobenzene, 1,4-dichlorobenzene, and acetone are false-positives.
SEEP-05	Results for 1,2-dichlorobenzene, 1,4-dichlorobenzene, and acetone are false-positives.
LEACHATE STATION SEDIMENT	
LT-1	Results for mercury and sodium are false-positives. Results for acetone, aluminum, iron, and manganese are considered estimates of the reported values.
LT-1 DUP	Results for sodium are false-positive. Results for acetone, aluminum, iron, and manganese are considered estimates of the reported values.
LT-3	Result for sodium is a false-positive.
LT-4	Results for lead, mercury, and sodium are false-positives.
LT-5	Results for lead, mercury, and sodium are false-positives.
QUALITY ASSURANCE/QUALITY CONTROL SAMPLES	
QD-001	Result for methylene chloride is a false-positive.
QS-001	Results for acetone and methylene chloride are false-positives.
QS-003	Results for trichloroethene and methylene chloride are false-positives.
QT-002	Results for trichloroethene, acetone, and methylene chloride are false-positives.
QT-003	Results for trichloroethene, acetone, and methylene chloride are false-positives.

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Appendix A

Field Monitoring and Sampling Forms

A.1 Field Record of Well Gauging Forms
A.2 Field Record of Well Gauging, Purging, and Sampling Forms
A.3 Field Record of Surface Water and Sediment Sampling Forms
A.4 Field Record of Seep Sampling Forms
A.5 Field Record of Landfill Gas Monitoring

Appendix A.1

Field Record of Well Gauging Forms

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name: LTMP Event 13 November 1998 Sites 1+3	Project No: 2960047	Date: 11/3/98
Weather/Temperature: Overcast, 45°		
EA Personnel: SC, FV	Equipment: Slope indicator, TVA-1000	

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft MSL)	PVC Casing Elevation (ft MSL)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft MSL)
			Air Ambient	Well Mouth						
EP-16	Y Y	Y	0	0	Good		58.92	34.50	49.90	24.42
MW-216A	Y Y	Y	0	3280	Good		71.17	37.68	46.96	33.49
MW-211A	Y Y	Y	0	15	Good		65.59	24.40	137.02	41.19
MW-211B	Y Y	Y	0	88	Good		65.44	30.14	36.50	35.30
MW-210I	Y Y	Y	0	0	Good		61.05	11.88	30.00	49.17
MW-201R	Y Y	Y	0	0	Good		58.88	10.86	39.51	48.02
MW-233R	Y Y	Y	0	0	Good		63.94	30.57	56.49	33.37
MW-215R	Y Y	Y	0	2.1%	Good		62.26	29.38	49.95	32.88
MW-202A	Y Y	Y	0	0	Good		52.40	20.17	31.09	32.23
MW-202B	Y Y	Y	0	0	Good		53.04	dry	17.93	—
MW-203	Y Y	Y	0	0	Good		52.75	31.69	42.04	21.06
MW-218	Y Y	Y	0	0	Good		54.16	34.03	53.54	20.13
MW-204	Y Y	Y	0	0	Good		50.50	30.03	37.18	20.47
MW-219	Y Y	Y	0	0	Good		51.87	30.53	71.82	21.34
EW-6	Y Y	Y	0	0	Good		57.74	21.21	39.05	36.53
EW-7	Y Y	Y	0	0	Good		51.13	27.18	50.55	23.95
MW-234R	Y Y	Y	0	1.1%	Good		68.55	35.30	59.52	33.25

NOTE: MSL = Mean sea level; PVC = Polyvinyl chloride; VOC = Volatile organic compounds.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name: LTMP Event 13 November 1998 Sites 1+3	Project No: 29600 97 7503	Date: 11/3/98
Weather/Temperature: overcast, 45°		
EA Personnel: SC, FV	Equipment: Slope indicator, TVA-1000	

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft MSL)	PVC Casing Elevation (ft MSL)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft MSL)
			Air Ambient	Well Mouth						
MW-232A	Y Y	Y	0	980	Good		71.18	37.93	54.76	33.25
MW-217B	Y Y	Y	0	53	Good		61.25	26.47	34.60	34.78
MW-217A	Y Y	Y	0	0	Good		61.78	29.26	44.56	32.52
MW-220	Y Y	Y	0	0	Good		47.20	27.63	49.87	19.57
MW-210A	Y Y	Y	0	0	Good		52.17	18.94	105.60	33.23
MW-210B	Y Y	Y	0	65	Good		54.72	30.44	26.40	24.28
EP-20	Y Y	Y	0	3900	Good		69.55	35.81	47.25	33.74
EP-19	Y Y	Y	0	0	Good		68.22	34.69	47.30	33.53
EP-18	Y Y	Y	0	0	Good		68.58	36.08	38.10	32.50
EP-17	Y Y	Y	0	0	Good		69.73	36.22	42.85	33.51
MW-210R	Y Y	Y	0	0	Good		59.90	21.94	112.00	33.96
MW-240	Y Y	Y	0	0	Good		52.21	31.21	42.60	21.00

NOTE: MSL = Mean sea level; PVC = Polyvinyl chloride; VOC = Volatile organic compounds.

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EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name: LTMP Event 13 Nov 1998 Eastern Plume	Project No: 29600.47.7503	Date: 11/3/98
Weather/Temperature: overcast, 45°		
EA Personnel: SC, FV	Equipment: Slope indicator, TVA-1000	

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft MSL)	PVC Casing Elevation (ft MSL)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft MSL)
			Air Ambient	Well Mouth						
MW-310	Y Y	Y	0	0	Good		53.39	28.99	72.83	24.40
MW-206A	Y Y	Y	0	0	Good		43.02	19.90	74.36	23.12
MW-206B	Y Y	Y	0	0	Good		42.77	19.72	27.17	23.05
MW-225A	Y Y	Y	0	0	Good		45.95	20.76	76.03	25.19
MW-225B	Y Y	Y	0	0	Good		46.25	21.70	42.00	24.55
MW-105A	Y Y	Y	0	0	Good		24.19	2.60	46.87	21.59
MW-105B	Y Y	Y	0	0	Good		24.55	8.00	22.91	16.55
MW-231A	Y Y	Y	0	0	Good		45.41	20.79	62.42	24.66
MW-231B	Y Y	Y	0	0	Good		46.31	25.10	57.86	21.21
MW-236A	Y Y	Y	0	0	Good		36.32	15.52	82.08	20.80
MW-318	Y Y	Y	0	0	Good		24.28	5.78	25.14	18.50
MW-229A	Y Y	Y	0	0	Good		33.83	13.66	64.97	20.17
MW-229B	Y Y	Y	0	0	Good		30.08	14.89	32.70	15.19
MW-313	Y Y	Y	0	0	Good		21.39	9.08	37.14	12.31
EP-1	Y Y	Y	0	0	Good		31.67	11.66	100.51	20.01
EP-2	Y Y	Y	0	0	Good		29.74	10.01	99.00	19.73
EP-3	Y Y	Y	0	0	Good		27.91	7.45	89.21	20.46

NOTE: MSL = Mean sea level; PVC = Polyvinyl chloride; VOC = Volatile organic compounds.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name: LTMP Event 13 Nov 1998 Eastern Plume	Project No: 29600477503	Date: 11/3/98
Weather/Temperature: Overcast, 45°		
EA Personnel: SC, FV	Equipment: Slope indicator, TVA-1000	

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft MSL)	PVC Casing Elevation (ft MSL)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft MSL)
			Air Ambient	Well Mouth						
EW-1	Y	Y	0	0	Good		25.34	10.48	99.66	14.86
MW-205	Y	Y	0	0	Good		45.99	24.24	25.15	21.75
EW-2	Y	Y	0	0	Good		31.63	12.07	90.86	19.56
EP-4	Y	Y	0	0	Good		32.59	9.79	91.11	22.80
EP-5	Y	Y	0	0	Good		34.61	10.81	79.85	23.80
EP-6	Y	Y	0	0	Good		40.14	15.73	83.51	24.41
MW-207A	Y	Y	0	0	Good		24.06	0.79	73.22	23.27
MW-207B	Y	Y	0	0	Good		22.90	5.76	9.57	17.14
MW-311	Y	Y	0	0	Good		21.48	14.33	55.78	7.15
P-112	Y	Y	0	0	Good		41.12	11.24	16.41	29.88
MW-319	Y	Y	0	0	Good		40.16	15.81	72.44	24.35
MW-106	Y	Y	0	0	Good		51.26	25.17	37.27	26.09
MW-208	Y	Y	0	0	Good		49.40	23.39	103.33	26.01
EW-3	Y	Y	0	0	Good		41.18	34.60	67.04	6.58
MW-223	Y	Y	0	0	Good		53.71	27.00	42.61	26.71
P-124	Y	Y	0	0	Good		51.12	DRY	23.25	—
EW-2A	Y	Y	0	0	Good		22.27	30.22	66.00	-7.95

NOTE: MSL = Mean sea level; PVC = Polyvinyl chloride; VOC = Volatile organic compounds.

EW-1 10 gpm
EW-2 11 gpm
EW-2A 13 gpm

EW-3 21 gpm

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name: LTMP Event 13 Nov 1998 Eastern Plume	Project No: 29600.47.7503	Date: 11/3/98
Weather/Temperature: Overcast, 45°		
EA Personnel: SC FV	Equipment: TVA-1000, Slope indicator	

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft MSL)	PVC Casing Elevation (ft MSL)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft MSL)
			Air Ambient	Well Mouth						
MW-209	Y Y	Y	0	0	Good		54.84	27.54	32.38	27.30
MW-222	Y Y	Y	0	0	Good		57.43	29.33	45.34	28.10
P-110	Y Y	Y	0	0	Good		56.70	DRY	24.14	—
MW-224	Y Y	Y	0	0	Good		57.63	29.41	46.95	28.22
EP-7	Y Y	Y	0	0	Good		48.49	22.21	70.20	26.28
EP-8	Y Y	Y	0	0	Good		47.31	20.50	80.38	26.81
EW-4	Y Y	Y	0	0	Good		37.13	27.35	69.37	9.78
EP-9	Y Y	Y	0	0	Good		37.84	10.02	62.46	27.82
EP-10	Y Y	Y	0	0	Good		37.78	10.48	58.00	27.30
EP-11	Y Y	Y	0	0	Good		41.59	12.34	65.03	29.25
EP-12	Y Y	Y	0	0	Good		49.38	19.69	69.61	29.73
MW-307	Y Y	Y	0	0	Good		62.70	15.80	22.21	46.90
EW-5	Y Y	Y	0	0	Good		36.25	26.86	84.99	9.39
P-105	Y Y	Y	0	0	Good		42.68	10.00	70.35	32.08
P-106	Y Y	Y	0	0	Good		38.83	11.13	71.06	27.70
EP-13	Y Y	Y	0	0	Good		38.96	6.88	71.03	32.08
EP-14	Y Y	Y	0	0	Good		43.46	11.95	80.05	31.51

NOTE: MSL = Mean sea level; PVC = Polyvinyl chloride; VOC = Volatile organic compounds.

EW-4 27 gpm
EW-5 18 gpm

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name: LTMP Event 13 Nov 1998 Eastern Plume	Project No: 29600.47.7503	Date: 11/13/98
Weather/Temperature: Overcast, 45		
EA Personnel: SC, FV	Equipment: Slope indicator, TVA-1000	

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft MSL)	PVC Casing Elevation (ft MSL)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft MSL)
			Air Ambient	Well Mouth						
EP-15	Y Y	Y	0	0	Good		45.37	15.20	82.68	30.17
P-132	Y Y	Y	0	0	Good		42.95	17.90	32.46	25.05
MW-303	Y Y	Y	0	0	Good		44.28	12.14	71.62	32.14
MW-305	Y Y	Y	0	0	Good		43.09	12.26	54.12	30.83
MW-NASB 212	Y Y	Y	0	0	Good		41.64	9.55	67.34	32.09
MW-306	Y Y	Y	0	0	Good		52.12	18.84	56.98	33.28
P-103	Y Y	Y	0	0	Good		60.35	24.55	29.05	35.80
MW-1104	Y Y	Y	0	0	Good		60.09	11.62	27.55	48.47
P-111	Y Y	Y	0	0	Good		31.48	4.52	9.99	26.96
MW-308	Y Y	Y	0	0	Good		37.70	5.75	72.85	31.95
MW-309A	Y Y	Y	0	0	Good		22.84	+3.47	72.71	26.31
MW-309B	Y Y	Y	0	0	Good		32.32	1.79	59.43	20.53
MW-312	Y Y	Y	0	0	Good		35.97	11.83	71.15	24.14
MW316A	Y Y	Y	0	0	Good		53.71	20.58	103.10	33.13
MW-316B	Y Y	Y	0	0	Good		54.40	10.29	57.85	44.11
MW-317A	Y Y	Y	0	0	Good		71.35	13.06	120.79	58.29
MW-317B	Y Y	Y	0	0	Good		70.10	11.86	96.95	58.24

NOTE: MSL = Mean sea level; PVC = Polyvinyl chloride; VOC = Volatile organic compounds.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name: LTMP Event 13 Nov 1998 Eastern Plume	Project No: 29600.47.7503	Date: 11/3/98
Weather/Temperature: Overcast 45°		
EA Personnel: SC, FV	Equipment: Slope indicator, TVA-1000	

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft MSL)	PVC Casing Elevation (ft MSL)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft MSL)
			Air Ambient	Well Mouth						
P-121	Y	Y	0	0	Good		50.78	15.75	17.35	35.03
P-123	Y	Y	0	0	Good		54.19	—	Blocked	—
MW-330	Y	Y	0	0	Good		35.71	6.96	33.40	28.75
MW-331	Y	Y	0	0	Good		30.54	3.85	53.80	26.69
MW-332	Y	Y	0	0	Good		25.33	12.20	18.60	13.13
MW-333	Y	Y	0	0	Good		27.25	11.60	40.00	15.65
MW-334	Y	Y	0	0	Good		30.93	13.90	41.60	17.03
[illegible]										
GP-1							31.10	3.00		28.10
GP-2							23.92	+1.65		25.57
GP-3							27.33	3.57		23.76
GP-4							18.39	2.75		15.64
GP-5							23.38	5.45		13.93
GP-6							15.22	8.80		6.42

NOTE: MSL = Mean sea level; PVC = Polyvinyl chloride; VOC = Volatile organic compounds.

Appendix A.2

Field Record of Well Gauging, Purging, and Sampling Forms

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Sites 1&3
WELL I.D.: 202A
WELL CONDITION: Good

PROJECT NUMBER: 29600.47 7503
WELL LOCK STATUS: cy ood
WEATHER: overcast, 30's,

GAUGE DATE: 11/4/98
SOUNDING METHOD: slope indicator
STICK UP/DOWN (ft): 2.11

GAUGE TIME: 1445
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11/4/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0.0 End: 0.0

PURGE TIME: 1447
FIELD PERSONNEL: KS, BA.
WELL MOUTH VOCs (ppm): Start: 0.0 End: 0.0

WELL VOLUME

A. WELL DEPTH (ft): 31.09
B. DEPTH TO WATER (ft): 20.18
C. LIQUID DEPTH (ft) (A-B): 10.91

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 6.60
F. THREE WELL VOLUMES (L) (E*3): 19.8

Parameter	Beginning	1	2	3	4	5
Time (min)	1448	1453	1458	1503	1508	1513
Depth to Water (ft)	20.18	22.26	22.32	22.34	21.18	22.61
Purge Rate (L/min)	.3	.3	.3	.2	.2	.2
Volume Purged (L)	0.3	1.8	3.3	4.8	5.3	~~0.8~~ 6.3
pH	3.67	5.15	5.51	5.58	5.64	5.61
Temperature (°C)	10.92	10.94	13.87	15.12	15.02	14.95
Conductivity (µmhos/cm)	449	375	497	563	576	563
Dissolved Oxygen (mg/L)	5.83	4.01	2.61	1.93	1.76	1.68
Turbidity (NTU)	60.0	20	19	40	37	28
Eh (mv)	41.2	115	117	107	114	114

TOTAL QUANTITY OF WATER REMOVED (L): 13.7

SAMPLERS: KS, BA
SAMPLING DATE: 11/4/98
SAMPLE TYPE: GRAB
SAMPLE BOTTLE IDs: ~~BNH3-SI-M007~~ VOCs
SAMPLE PARAMETERS: VOC, TAL elements

SAMPLING TIME (START/END): 1535 - 1550
DECONTAMINATION FLUIDS USED: DI
SAMPLE PRESERVATIVES: HCl, HNO3

COMMENTS AND OBSERVATIONS: have to adjust pump to maintain flow
Trouble with YSI, all parameters stable, with the exception of Turbidity.
Tubidity - sample visually clear - Take sample @ 1535

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Sites 1 & 3	Project No.: 29600.47	Date: 11/4/98
Well ID: 202A	Field Personnel: KS BA	

Parameter	6	7	8	9	10	11
Time (min.)	1518					
Depth to Water (ft)	27.28					
Purge Rate (L/min)	.2					
Volume Purged (L)	9.3					
pH	5.66					
Temperature (°C)	15.68					
Conductivity (μmhos/cm)	564					
Dissolved Oxygen (mg/L)	1.93					
Turbidity (NTU)	15					
Eh (mv)	110					

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Sites 1+3
WELL I.D.: MW-203
WELL CONDITION: good

PROJECT NUMBER: 29600.47.7503
WELL LOCK STATUS: locked
WEATHER: Overcast, 40°

GAUGE DATE: 11/4/98
SOUNDING METHOD: Slope indicator
STICK (UP)/DOWN (ft): 2.12

GAUGE TIME: 1430
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2

PURGE DATE: 11/4/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1433
FIELD PERSONNEL: RH, SC
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 42.04
B. DEPTH TO WATER (ft): 31.69
C. LIQUID DEPTH (ft) (A-B): 10.35
D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 6.26
F. THREE WELL VOLUMES (L) (E*3): 18.78

Parameter	Beginning	1	2	3	4	5
Time (min)	1438	1443	1448	1453	1458	1503
Depth to Water (ft)	31.74	31.74	31.72	31.72	31.72	31.72
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	0.6	1.6	2.6	3.6	4.6	5.6
pH	5.99	5.92	5.98	5.99	5.98	5.98
Temperature (°C)	10.18	11.17	13.02	13.63	13.57	13.62
Conductivity (μmhos/cm)	327	679	757	796	790	805
Dissolved Oxygen (mg/L)	8.79	8.16	8.31	8.35	8.36	8.35
Turbidity (NTU)	281	7	2	1	1	1
Eh (mv)	60	15	55	88	103	109

TOTAL QUANTITY OF WATER REMOVED (L): _____

SAMPLERS: RH, SC
SAMPLING TIME (START/END): 1510/1513
SAMPLING DATE: 11/4/98
DECONTAMINATION FLUIDS USED: none
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL, nitric acid
SAMPLE BOTTLE IDs: BN-13-SI-MW005
SAMPLE PARAMETERS: VOC, TAL Elements
COMMENTS AND OBSERVATIONS: cleaned out cup @ 1440
containerized water + ran through plant

ph check OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Sites 1+3	Project No.: 29600477503	Date: 11/4/98
Well ID: MW-203	Field Personnel: RH SC	

Parameter	6	7	8	9	10	11
Time (min.)	1508					
Depth to Water (ft)	31.72					
Purge Rate (L/min)	0.2					
Volume Purged (L)	6.6					
pH	5.99					
Temperature (°C)	13.66					
Conductivity (μmhos/cm)	799					
Dissolved Oxygen (mg/L)	8.31					
Turbidity (NTU)	2					
Eh (mv)	111					

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Sites 1+3
WELL I.D.: MW-204
WELL CONDITION: good

PROJECT NUMBER: 29600.47.7503
WELL LOCK STATUS: locked
WEATHER: Overcast, 40°

GAUGE DATE: 11/4/98
SOUNDING METHOD: Slope indicator
STICK (UP)/DOWN (ft): 1.74

GAUGE TIME: 1250
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2

PURGE DATE: 11/4/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1252
FIELD PERSONNEL: RH, SC
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 37.18
B. DEPTH TO WATER (ft): 30.08
C. LIQUID DEPTH (ft) (A-B): 7.10

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 4.30
F. THREE WELL VOLUMES (L) (E*3): 12.9

Parameter	Beginning	1	2	3	4	5
Time (min)	1255	1300	1305	1308	1318	
Depth to Water (ft)	30.08	30.08	30.08	30.08	30.08	
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	
Volume Purged (L)	0.6	1.6	2.6	3.2	3.8	
pH	6.42	6.42	6.42	6.42	6.42	
Temperature (°C)	9.36	9.68	10.41	10.61	10.79	
Conductivity (μmhos/cm)	47	52	51	51	53	
Dissolved Oxygen (mg/L)	11.13	11.10	11.10	11.07	11.08	
Turbidity (NTU)	97	25	5	4	2	
Eh (mv)	175	163	158	155	155	

TOTAL QUANTITY OF WATER REMOVED (L): 5.2

SAMPLERS: RH, SC
SAMPLING TIME (START/END): 1315 / 1318
SAMPLING DATE: 11/4/98
DECONTAMINATION FLUIDS USED: none
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL, nitric acid
SAMPLE BOTTLE IDs: BN-13-SI-MW004
SAMPLE PARAMETERS: VOC, TAL Elements
COMMENTS AND OBSERVATIONS: containerized water + ran through plant

ph check OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Site 13
WELL I.D.: MW-217B
WELL CONDITION: good
PROJECT NUMBER: 29600.47.7503
WELL LOCK STATUS: good
WEATHER: Cloudy ± 40

GAUGE DATE: 11/4/98
SOUNDING METHOD: Slope Indicator
STICK (UP) DOWN (ft): 1.30
GAUGE TIME: 1250
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11/4/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
PURGE TIME: 1255
FIELD PERSONNEL: KS/BA
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 34.60
B. DEPTH TO WATER (ft): 27.32
C. LIQUID DEPTH (ft) (A-B): 7.28
D. WELL VOLUME/FT (L): ~~12~~ 0.165 440
E. WELL VOLUME (L) (C*D): 13.20
F. THREE WELL VOLUMES (L) (E*3):

Parameter	Beginning	1	2	3	4	5
Time (min)	1300	1305	1310	1315	1320	1325
Depth to Water (ft)	27.32	27.71	28.03	28.30	28.30	28.19
Purge Rate (L/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	1.0	2.0	3.0	4.0	5.0	6.0
pH	5.10	5.94	6.11	4.98	6.04	6.14
Temperature (°C)	10.34	14.08	18.22	18.00	18.07	17.99
Conductivity (µmhos/cm)	1191	1776	2093	2236	2321	2329
Dissolved Oxygen (mg/L)	1.01	4.20	0.87	18.93	.67	0.56
Turbidity (NTU)	156	276	160	240	324	633
Eh (mv)	46	1.1	-13.3	-19.2	-32.2	-41.2

TOTAL QUANTITY OF WATER REMOVED (L): 20

SAMPLERS: KS/BA
SAMPLING DATE: 11/4/98
SAMPLE TYPE: Grab
SAMPLE BOTTLE IDs: BN-13-SI-MW003
SAMPLE PARAMETERS: VOC, TAL Elements
SAMPLING TIME (START/END): 1422 - 1438
DECONTAMINATION FLUIDS USED: DI
SAMPLE PRESERVATIVES: HCL, HNO3

COMMENTS AND OBSERVATIONS: YSI #50 - Problems keeping flow steady had to adjust flow constantly

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Site 43	Project No.: 24600.47.7503	Date: 11/4/98
Well ID:	MW-217B	Field Personnel:	KS/BA

Parameter	6	7	8	9	10	11
Time (min.)	1330	1335	1345	1350	1355	1400
Depth to Water (ft)	28.19	28.20	28.32	28.32	28.70	28.70
Purge Rate (L/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	7.0	8.0	10.0	11.0	12.0	13.0
pH	6.17	6.06	5.85	6.14	6.07	6.19
Temperature (°C)	18.76	19.84	20.38	21.03	17.94	17.04
Conductivity (μmhos/cm)	24.85	2554	2611	2643	2465	2415
Dissolved Oxygen (mg/L)	0.49	2.29	1.16	0.77	0.81	0.66
Turbidity (NTU)	829	31.7	10	126	258	185
Eh (mv)	-52.3	-37.4	-41	-52	-58	-64

Parameter	12	13	14	15	16	17
Time (min)	1403	1406	1409	1412		
Depth to Water (ft)	28.70	28.70	28.70	28.65		
Purge Rate (L/min)	.2	.2	.2	.2		
Volume Purged (L)	13.6	14.2	14.8	15.4		
pH	6.19	6.16	6.19	*		
Temperature (°C)	19.17	19.64	19.12			
Conductivity (μmhos/cm)	2538	2559	2529			
Dissolved Oxygen (mg/L)	0.54	0.42	1.98			
Turbidity (NTU)	231	474	221			
Eh (mv)	-76	-82	-54			

COMMENTS AND OBSERVATIONS *@ 1412 drawn down to pump - shut down to recharge will sample after recharge.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Site 43
WELL I.D.: MW-218
WELL CONDITION: good

PROJECT NUMBER: 29600.47.7503
WELL LOCK STATUS: locked
WEATHER: overcast, 40°

GAUGE DATE: 11/4/98
SOUNDING METHOD: Slope indicator
STICK (UP)/DOWN (ft): 2.61

GAUGE TIME: 1330
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2

PURGE DATE: 11/4/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1335
FIELD PERSONNEL: RH, SC
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 53.54
B. DEPTH TO WATER (ft): 34.08
C. LIQUID DEPTH (ft) (A-B): 19.46

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 11.77
F. THREE WELL VOLUMES (L) (E*3): 35.31

Parameter	Beginning	1	2	3	4	5
Time (min)	1340	1345	1350	1355	1400	1405
Depth to Water (ft)	37.51	38.10	38.73	39.15	39.40	39.62
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	1.0	2.0	3.0	4.0	5.0	6.0
pH	7.86	7.86	7.42	7.62	7.67	7.67
Temperature (°C)	10.16	10.15	10.96	11.09	11.53	12.02
Conductivity (μmhos/cm)	878	863	812	810	816	826
Dissolved Oxygen (mg/L)	1.15	1.13	1.18	1.08	1.02	0.83
Turbidity (NTU)	81	79	42	38	33	31
Eh (mv)	-182	-179	-167	-160	-160	-171

TOTAL QUANTITY OF WATER REMOVED (L): 11.6

SAMPLERS: RH, SC
SAMPLING TIME (START/END): 1430 / 1433
SAMPLING DATE: 11/4/98
DECONTAMINATION FLUIDS USED: none
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL, nitric acid
SAMPLE BOTTLE IDs: BN-13-51-MW006
SAMPLE PARAMETERS: VOC, TAL Elements
COMMENTS AND OBSERVATIONS: Containerized water from through plant
ph check OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: SHOS 113	Project No.: 29600477503 Date: 11/4/98
Well ID: MW-218	Field Personnel: RH, SC

Parameter	6	7	8	9	10	11
Time (min.)	1410	1415	1420	1425		
Depth to Water (ft)	39.75	40.53	40.98	41.41		
Purge Rate (L/min)	0.2	0.2	0.2	0.2		
Volume Purged (L)	7.0	8.0	9.0	10.0		
pH	7.59	7.62	7.63	7.56		
Temperature (°C)	13.69	13.67	13.79	14.43		
Conductivity (μmhos/cm)	864	886	876	882		
Dissolved Oxygen (mg/L)	1.14	0.97	0.89	0.88		
Turbidity (NTU)	21	19	17	18		
Eh (mv)	-187	-186	-187	-189		

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	Sites 113	PROJECT NUMBER:	29600147.7503
WELL I.D.:	MW-219	WELL LOCK STATUS:	locked
WELL CONDITION:	Good	WEATHER:	overcast, 45°
GAUGE DATE:	11/4/98	GAUGE TIME:	1142
SOUNDING METHOD:	slope indicator	MEASUREMENT REF:	TOC
STICK (UP)/DOWN (ft):	2.56	WELL DIAMETER (in.):	2
PURGE DATE:	11/4/98	PURGE TIME:	1145
PURGE METHOD:	Low Flow	FIELD PERSONNEL:	RH, SC
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft):	71.82	D. WELL VOLUME/FT (L):	0.605
B. DEPTH TO WATER (ft):	30.56	E. WELL VOLUME (L) (C*D):	24.96
C. LIQUID DEPTH (ft) (A-B):	41.26	F. THREE WELL VOLUMES (L) (E*3):	74.88

Parameter	Beginning	1	2	3	4	5
Time (min)	1148	1152	1156	1200	1205	1210
Depth to Water (ft)	30.61	30.61	30.61	30.61	30.61	30.61
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	0.6	1.4	2.2	3.0	4.0	5.0
pH	5.67	5.94	6.17	6.22	6.22	6.21
Temperature (°C)	9.01	8.95	8.93	9.43	10.11	10.49
Conductivity (µmhos/cm)	119	160	113	99	101	104
Dissolved Oxygen (mg/L)	8.09	7.79	7.97	7.91	7.83	7.76
Turbidity (NTU)	158	172	306	278	168	134
Eh (mv)	261	256	242	231	216	197

TOTAL QUANTITY OF WATER REMOVED (L): 13

SAMPLERS:	RH, SC	SAMPLING TIME (START/END):	1245 / 1249
SAMPLING DATE:	11/4/98	DECONTAMINATION FLUIDS USED:	none
SAMPLE TYPE:	Grab	SAMPLE PRESERVATIVES:	HCL, nitric acid

SAMPLE BOTTLE IDs: BN-13-SI-MW002 1245 Dup BN-13-SI-MWX101

SAMPLE PARAMETERS: VOC, TAL metals

COMMENTS AND OBSERVATIONS: containerized water ran through plant

ph check OK

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Sites 1+3	Project No.: 29600472503	Date: 11/4/98
Well ID: MW-219	Field Personnel: SYC, RH	

Parameter	6	7	8	9	10	11
Time (min.)	1215	1220	1225	1230	1235	1240
Depth to Water (ft)	30.61	30.61	30.61	30.61	30.63	30.63
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	6.0	7.0	8.0	9.0	10.0	11.0
pH	6.21	6.20	6.21	6.20	6.19	6.19
Temperature (°C)	10.70	10.95	11.03	11.09	11.19	11.23
Conductivity (µmhos/cm)	100	106	100	104	105	101
Dissolved Oxygen (mg/L)	7.74	7.63	7.65	7.60	7.64	7.59
Turbidity (NTU)	~~280~~	52	41	37	40	39
Eh (mv)	180	171	168	168	169	169

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (µmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAS Brunswick
WELL I.D.: MW-240
WELL CONDITION: Good
PROJECT NUMBER: 29600.4
WELL LOCK STATUS: Locked
WEATHER: Sunny ± 45

GAUGE DATE: 11/12/98
SOUNDING METHOD: Slope Indicator
STICK UP/DOWN (ft):
GAUGE TIME: 1415
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11/12/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0.0 End: 0.0
PURGE TIME: 1418
FIELD PERSONNEL: CS/BA
WELL MOUTH VOCs (ppm): Start: 0.0 End: 0.0

WELL VOLUME

A. WELL DEPTH (ft): 42.60
B. DEPTH TO WATER (ft): 31.16
C. LIQUID DEPTH (ft) (A-B): 11.44
D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 6.92
F. THREE WELL VOLUMES (L) (E*3): 20.76

Parameter	Beginning	1	2	3	4	5
Time (min)	1420	1425	1428	1431	1434	1437
Depth to Water (ft)	31.16	31.30	31.30	31.30	31.19	31.19
Purge Rate (L/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	.4	1.4	2.0	2.6	3.2	3.8
pH	7.60	7.81	7.91	7.90	7.86	7.84
Temperature (°C)	10.30	10.43	10.70	11.41	11.50	11.50
Conductivity (μmhos/cm)	167	164	158	156	144	144
Dissolved Oxygen (mg/L)	9.78	9.74	9.66	9.61	9.51	9.50
Turbidity (NTU)	Ø	Ø	Ø	Ø	Ø	Ø
Eh (mv)	160	159	159	161	164	165

TOTAL QUANTITY OF WATER REMOVED (L): 5.6
SAMPLERS: CS/BA
SAMPLING TIME (START/END): 1440-1446
SAMPLING DATE: 11/12/98
DECONTAMINATION FLUIDS USED: DI
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN-13-S1-MW008
SAMPLE PARAMETERS: VOC
COMMENTS AND OBSERVATIONS:

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Site 123
WELL I.D.: MW-2101
WELL CONDITION: good

PROJECT NUMBER: 29600.47.7503
WELL LOCK STATUS: good
WEATHER: Cloudy ± 40

GAUGE DATE: 11/4/98
SOUNDING METHOD: Slope Indicator
STICK UP/DOWN (ft): 5.24

GAUGE TIME: 1000
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11/4/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0.0 End: 0

PURGE TIME: 1008
FIELD PERSONNEL: KS BA
WELL MOUTH VOCs (ppm): Start: 0.0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 30.00
B. DEPTH TO WATER (ft): 11.95
C. LIQUID DEPTH (ft) (A-B): 18.05

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 10.92
F. THREE WELL VOLUMES (L) (E*3): 32.76

Parameter	Beginning	1	2	3	4	5
Time (min)	1012	1017	1022	1027	1032	1037
Depth to Water (ft)	11.95	11.98	11.98	11.98	11.98	11.98
Purge Rate (L/min)	.3	.3	.3	.3	.3	.3
Volume Purged (L)	1.2	2.7	4.2	5.7	7.2	8.7
pH	5.01	5.54	5.59	5.59	5.51	5.59
Temperature (°C)	11.67	11.84	13.68	15.00	16.15	15.94
Conductivity (μmhos/cm)	353	392	291	257	271	317
Dissolved Oxygen (mg/L)	5.05	6.01	6.01	5.94	5.94	5.59
Turbidity (NTU)	3.0	3	4	2	2	3
Eh (mv)	204	205	208	213	216	218

TOTAL QUANTITY OF WATER REMOVED (L): 17.3

SAMPLERS: KS/BA
SAMPLING DATE: 11/4/98
SAMPLE TYPE: Grab
SAMPLE BOTTLE IDs: 2W-13-51-MW2101 + MS/MSD
SAMPLE PARAMETERS: VOC and Metals (TAL Elements)

SAMPLING TIME (START/END): 1108-
DECONTAMINATION FLUIDS USED: DI,
SAMPLE PRESERVATIVES:

COMMENTS AND OBSERVATIONS: YSI # 50, Clean cup @ 1028,

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Site 1 & 3	Project No.: 2960.47.7503	Date: 11/4/98
Well ID: MW-2101	Field Personnel: PB, BA	

Parameter	6	7	8	9	10	11
Time (min.)	1042	1045	1048	1051	1054	
Depth to Water (ft)	11.98	11.98	11.98	11.97	11.97	
Purge Rate (L/min)	.3	.3	.3	.3	.3	
Volume Purged (L)	10.2	11.1	12.0	12.9	13.1	
pH	5.62	5.64	5.66	5.67	5.67	
Temperature (°C)	15.70	15.22	14.80	14.55	14.49	
Conductivity (µmhos/cm)	318	321	319	321	322	
Dissolved Oxygen (mg/L)	5.86	5.89	5.93	5.95	5.91	
Turbidity (NTU)	4	5	6	8	2	
Eh (mv)	219	221	222	222	224	

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (µmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-105A
WELL CONDITION: Good

PROJECT NUMBER: 29600.47.7503
WELL LOCK STATUS: locked
WEATHER: Sunny, 50°

GAUGE DATE: 11/12/98
SOUNDING METHOD: Slope Indicator
STICK UP/DOWN (ft): 3.17

GAUGE TIME: 920
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2

PURGE DATE: 11/12/98
PURGE METHOD: peristaltic
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 945
FIELD PERSONNEL: SC, BA
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 46.87
B. DEPTH TO WATER (ft): 2.63
C. LIQUID DEPTH (ft) (A-B): 44.24

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 26.77
F. THREE WELL VOLUMES (L) (E*3): 80.31

Parameter	Beginning	1	2	3	4	5
Time (min)	950	954	958	1001	1004	
Depth to Water (ft)	2.89	3.52	3.52	3.55	3.55	
Purge Rate (L/min)	1.5	1.5	1.5	1.5	1.5	
Volume Purged (L)	7.5	13.5	19.5	24.0	28.5	
pH	6.85	6.84	6.84	6.82	6.81	
Temperature (°C)	8.96	8.17	8.11	8.09	8.08	
Conductivity (µmhos/cm)	38	34	35	35	35	
Dissolved Oxygen (mg/L)	10.75	10.84	11.47	11.35	11.27	
Turbidity (NTU)	144	55	5	5	5	
Eh (mv)	149	153	155	158	159	

TOTAL QUANTITY OF WATER REMOVED (L): 42

SAMPLERS: SC, BA
SAMPLING TIME (START/END): 1010/1013
SAMPLING DATE: 11/12/98
DECONTAMINATION FLUIDS USED: none
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN13EPMW023
SAMPLE PARAMETERS: VOC
COMMENTS AND OBSERVATIONS: ph check OK cleaned out cup at 955

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	24600.47 7503
Well ID:	MW-205	Well Lock Status:	Good
Well Condition:	Good	Weather:	cloudy, cold (30)

Gauge Date:	11/9/98	Gauge Time:	1300
Sounding Method:	slope indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	1.94	Well Diameter (in.):	2"

Purge Date:	11/9/98	Purge Time:	1305
Purge Method:	Low Flow	Field Personnel:	KS, BDA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	78.77	D. Well Volume/ft (L):	.605
B. Depth to Water (ft):	24.27	C. Well Volume (L)	32.97
E. Liquid Depth (ft) (A-B)	54.5	E. Three Well Volumes (L)	98.91

Parameter	Beginning	1	2	3	4	5
Time (min.)	1307	1312	1317	1322	1327	1332
Depth to Water (ft)	24.27	24.42	24.43	24.41	24.41	24.45
Purge Rate (l/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	.4	1.4	2.4	3.4	4.4	5.4
pH	6.61	6.15	6.09	6.13	6.19	6.22
Temperature (°C)	8.93	8.83	8.84	8.97	9.26	9.43
Conductivity (μmhos/cm)	160	147	134	135	135	133
Dissolved Oxygen (mg/L)	5.81	3.27	4.00	3.08	2.82	2.64
Turbidity (NTU)	13	46	53	65	51	42
eH (mV)	231	244	248	248	247	247

Total Quantity of Water Removed (L):	17		
Samplers:	KS, BDA	Sampling Time (Start/End):	1425 - 1430
Sampling Date:	11/9/98	Decontamination Fluids Used:	DI
Sample Type:	GRAB	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-13-EP-MW004		
Sample Parameters:	VOCs		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47 7503 Date: 11/9/98

Well ID: MW-205 Field Personnel: KS BDA

Parameter	6	7	8	9	10	11
Time (min.)	1337	1342	1347	1352	1357	1402
Depth to Water (ft)	24.41	24.41	24.40	24.41	24.43	24.42
Purge Rate (L/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	6.4	7.4	8.4	9.4	10.4	11.4
pH	6.34	6.37	6.40	6.42	6.45	6.54
Temperature (°C)	9.59	9.60	9.66	9.67	9.66	9.91
Conductivity (μmhos/cm)	132	133	133	132	132	129
Dissolved Oxygen (mg/L)	3.77	3.12	2.96	2.92	2.90	3.00
Turbidity (NTU)	28	26	21	20	17	17
eH (mV)	251	249	249	248	247	246

Parameter	12	13	14	15	16	17
Time (min.)	1407	1412	1417	1420	1423	
Depth to Water (ft)	24.41	24.41	24.41	24.41	24.41	
Purge Rate (L/min)	.2	.2	.2	.2	.2	
Volume Purged (L)	12.4	13.4	14.4	14.9	15.4	
pH	6.55	6.58	6.58	6.59	6.59	
Temperature (°C)	9.93	9.96	9.95	9.93	9.92	
Conductivity (μmhos/cm)	129	130	131	130	131	
Dissolved Oxygen (mg/L)	3.20	3.19	3.19	3.22	3.23	
Turbidity (NTU)	14	12	9	8	8	
eH (mV)	244	244	242	243	243	

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-207A
WELL CONDITION: good

PROJECT NUMBER: 2960047
WELL LOCK STATUS: good
WEATHER: sunny 50

GAUGE DATE: 11-10-98
SOUNDING METHOD: slope Indicator
STICK UP/DOWN (ft): 2.50

GAUGE TIME: 1050
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11/10/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1053
FIELD PERSONNEL: SC, SD
WELL MOUTH VOCs (ppm): Start: 0 End 0

WELL VOLUME

A. WELL DEPTH (ft): 73.22
B. DEPTH TO WATER (ft): 0.56
C. LIQUID DEPTH (ft) (A-B): 72.66

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 43.96
F. THREE WELL VOLUMES (L) (E*3): 131.88

Parameter	Beginning	1	2	3	4	5
Time (min)	1053	1058	1103	1108	1112	1117
Depth to Water (ft)	0.56	0.84	0.99	2.44	2.44	2.44
Purge Rate (L/min)	.8	.8	.8	.8	.8	.8
Volume Purged (L)	.8	4.0	8.0	12.0	16.0	20.0
pH	6.91	6.65	6.58	6.56	6.56	6.56
Temperature (°C)	8.56	8.63	8.87	8.97	8.97	8.97
Conductivity (µmhos/cm)	1	133	130	131	130	131
Dissolved Oxygen (mg/L)	3.17	1.03	1.27	0.21	.19	.19
Turbidity (NTU)	21	40	13	7	3	4
Eh (mv)	98	105	106	106	106	106

TOTAL QUANTITY OF WATER REMOVED (L): 25.6

SAMPLERS: SD, SC
SAMPLING TIME (START/END): 1120-1125
SAMPLING DATE: 11-10-98
DECONTAMINATION FLUIDS USED: None
SAMPLE TYPE: grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN-13-EP011
SAMPLE PARAMETERS: VOC

COMMENTS AND OBSERVATIONS:
purged at lowest possible rate, water containerized run through treatment plant
PH check O.K.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-224
WELL CONDITION: Good

PROJECT NUMBER: 2960047
WELL LOCK STATUS: good
WEATHER: Overcast, 45°

GAUGE DATE: 11-8-98
SOUNDING METHOD: Slope Indicator
STICK UP/DOWN (ft): Stick up 2.55

GAUGE TIME: 1450
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11-8-98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1450
FIELD PERSONNEL: SC, SD
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 46.95
B. DEPTH TO WATER (ft): 28.29
C. LIQUID DEPTH (ft) (A-B): 18.66

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 11.29
F. THREE WELL VOLUMES (L) (E*3): 33.87

Parameter	Beginning	1	2	3	4	5
Time (min)	1450	1455	1457	1500	1503	1506
Depth to Water (ft)	28.29	28.29	28.29	28.29	28.29	28.29
Purge Rate (L/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	.2	1.8	1.6	2.2	2.8	3.4
pH	5.87	5.82	5.80	5.78	5.76	5.7
Temperature (°C)	7.67	7.95	8.10	8.43	9.90	10.78
Conductivity (µmhos/cm)	41	37	40	44	45	45
Dissolved Oxygen (mg/L)	12.29	12.32	12.17	12.03	11.70	11.50
Turbidity (NTU)	10	1	1	1	1	0
Eh (mv)	141	142	143	144	145	146

TOTAL QUANTITY OF WATER REMOVED (L): 7.2

SAMPLERS: SC, SD
SAMPLING TIME (START/END): 1520 - 1525
SAMPLING DATE: 11/8/98
DECONTAMINATION FLUIDS USED: none
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs:
SAMPLE PARAMETERS: BN-13-EP-MW007 VOC
COMMENTS AND OBSERVATIONS: ph check OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project No.: 296047	Date: 11-8-98 ~~11-10-98~~
Well ID: MW-224	Field Personnel: SD, SC	

Parameter	6	7	8	9	10	11
Time (min.)	1509	1512	1518			
Depth to Water (ft)	28.29	28.29	28.29			
Purge Rate (L/min)	.12	.12	.12			
Volume Purged (L)	4.8	4.6	5.2			
pH	5.72	5.71	5.70			
Temperature (°C)	11.30	11.40	11.41			
Conductivity (µmhos/cm)	51	51	51			
Dissolved Oxygen (mg/L)	11.33	11.30	11.19			
Turbidity (NTU)	0	0	0			
Eh (mv)	147	148	149			

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (µmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600.47.7503
Well ID:	MW-225A	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Cloudy ± 30

Gauge Date:	11/9/98	Gauge Time:	1435
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	2.81	Well Diameter (in.):	2"

Purge Date:	11/9/98	Purge Time:	1436
Purge Method:	Low Flow	Field Personnel:	KS/BA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	76.03	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	20.84	C. Well Volume (L)	33.39
E. Liquid Depth (ft) (A-B)	55.19	E. Three Well Volumes (L)	100.17

Parameter	Beginning	1	2	3	4	5
Time (min.)	1440	1445	1450	1455	1500	1505
Depth to Water (ft)	20.84	20.83	20.85	20.85	20.85	20.85
Purge Rate (l/min)	.3	.3	.3	.3	.3	.3
Volume Purged (L)	.3	1.8	3.3	4.8	6.3	7.8
pH	5.79	5.93	6.00	6.06	6.11	6.12
Temperature (°C)	8.11	7.73	7.98	8.27	8.56	8.70
Conductivity (µmhos/cm)	89	85	89	83	85	85
Dissolved Oxygen (mg/L)	8.43	7.89	7.90	7.56	7.54	7.50
Turbidity (NTU)	4.0	60	73	2	1	1
eH (mV)	243	237	238	239	239	242

Total Quantity of Water Removed (L):	10.2		
Samplers:	KS/BA	Sampling Time (Start/End):	1508 – 1513
Sampling Date:	11/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-MW006		
Sample Parameters:	VOC		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600417503
Well ID:	MW-209A	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Sunny/Cool ± 40

Gauge Date:	11/10/98	Gauge Time:	0950
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	2.55	Well Diameter (in.):	2"

Purge Date:	11/10/98	Purge Time:	0952
Purge Method:	Low Flow	Field Personnel:	KS/BA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	32.70	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	13.53	C. Well Volume (L)	11.60
E. Liquid Depth (ft) (A-B)	19.17	E. Three Well Volumes (L)	34.8

Parameter	Beginning	1	2	3	4	5
Time (min.)	0954	0959	1004	1009	1012	1015
Depth to Water (ft)	13.53	13.70	13.70	13.70	13.70	13.70
Purge Rate (l/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	1.4	1.4	2.4	3.4	4.0	4.6
pH	6.81	6.90	6.98	7.01	7.03	7.03
Temperature (°C)	7.98	8.57	9.07	9.31	9.36	9.39
Conductivity (µmhos/cm)	72	74	76	80	78	78
Dissolved Oxygen (mg/L)	7.73	7.69	7.39	7.38	7.38	7.40
Turbidity (NTU)	Ø	Ø	Ø	Ø	Ø	Ø
eH (mV)	168	168	167	169	169	169

Total Quantity of Water Removed (L):	6.4		
Samplers:	KS/BA	Sampling Time (Start/End):	1018 - 1024
Sampling Date:	11/10/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-MW209		
Sample Parameters:	VOC		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-230A
WELL CONDITION: good

PROJECT NUMBER: 296004 77503
WELL LOCK STATUS: locked
WEATHER: overcast, 50°

GAUGE DATE: 11/9/98
SOUNDING METHOD: sight indicator
STICK (UP)/DOWN (ft): 2.21

GAUGE TIME: 1015
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2

PURGE DATE: 11/9/98
PURGE METHOD: low flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1020
FIELD PERSONNEL: SD, SC
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 82.08
B. DEPTH TO WATER (ft): 15.72
C. LIQUID DEPTH (ft) (A-B): 66.36

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 40.15
F. THREE WELL VOLUMES (L) (E*3): 120.45

Parameter	Beginning	1	2	3	4	5
Time (min)	1024	1028	1032	1035	1040	1045
Depth to Water (ft)	16.00	15.88	15.88	15.86	15.86	5.86
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	1.6	3.2	4.8	6.0	8.0	10.0
pH	7.11	7.55	7.69	7.77	7.81	7.85
Temperature (°C)	8.55	7.82	7.92	8.04	8.18	8.35
Conductivity (µmhos/cm)	65	64	67	68	68	68
Dissolved Oxygen (mg/L)	6.85	1.99	1.18	0.93	0.77	0.63
Turbidity (NTU)	9	133	99	68	52	36
Eh (mv)	80	10	-69	-99	-121	-148

TOTAL QUANTITY OF WATER REMOVED (L): 32

SAMPLERS: SD, SC
SAMPLING TIME (START/END): 11:35 end 11:40
SAMPLING DATE: 11/9/98
DECONTAMINATION FLUIDS USED: none
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN-13EP-MW002, BN-13-EP-MWXD1
SAMPLE PARAMETERS: VOC

COMMENTS AND OBSERVATIONS:
Contamenged water ran through plant
ph check OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project No.: 29600.47.2503	Date: 11/9/98
Well ID: MW-~~3~~236A	Field Personnel: SD, SC	

Parameter	6	7	8	9	10	11
Time (min.)	1050	1055	1100	1105	1110	1115
Depth to Water (ft)	15.86	15.86	15.86	15.86	15.86	15.86
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	12.00	14.00	16.00	18.00	20.00	22.00
pH	7.86	7.87	7.87	7.88	7.88	7.88
Temperature (°C)	8.42	8.46	8.47	8.52	8.56	8.60
Conductivity (µmhos/cm)	64	93	93	62	93	67
Dissolved Oxygen (mg/L)	0.50	0.44	.36	.31	.31	.28
Turbidity (NTU)	23	19.4	18.8	12.8	26	32.2
Eh (mv)	-160	-169	-172	-177	-180	184.3

Parameter	12	13	14	15	16	17
Time (min)	1120	1125	1130			
Depth to Water (ft)	15.86	15.86	15.86			
Purge Rate (L/min)	0.4	0.4	0.4			
Volume Purged (L)	24.00	26.00	28.00			
pH	7.89	7.89	7.89			
Temperature (°C)	8.61	8.62	8.62			
Conductivity (µmhos/cm)	68	68	68			
Dissolved Oxygen (mg/L)	~~.28~~	.23	.24			
Turbidity (NTU)	32	32	32			
Eh (mv)	-185	-187	-187			

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-23I
WELL CONDITION:

PROJECT NUMBER: 29600.47.7503
WELL LOCK STATUS: locked
WEATHER: overcast, 50°

GAUGE DATE: 11/9/98
SOUNDING METHOD: Slope indicator
STICK UP/DOWN (ft): 2.65

GAUGE TIME: 1225
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2

PURGE DATE: 11/9/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1228
FIELD PERSONNEL: SP, SC
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 62.42
B. DEPTH TO WATER (ft): 20.80
C. LIQUID DEPTH (ft) (A-B): 41.62

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 25.18
F. THREE WELL VOLUMES (L) (E*3): 75.54

Parameter	Beginning	1	2	3	4	5
Time (min)	1233	1238	1243	1248	1250	1255
Depth to Water (ft)	21.04	21.15	21.00	21.02	21.02	21.02
Purge Rate (L/min)	0.4	0.4	0.3	0.3	0.3	0.3
Volume Purged (L)	2.0	4.0	5.5	7.0	8.5	10
pH	6.77	6.61	6.64	6.62	6.64	6.64
Temperature (°C)	7.75	8.52	8.82	9.01	9.04	9.09
Conductivity (µmhos/cm)	47	46	46	45	44	49
Dissolved Oxygen (mg/L)	9.07	9.49	9.80	9.79	9.68	9.68
Turbidity (NTU)	311	473	256	152.7	145	89
Eh (mv)	56	69	78	83.4	84	90.1

TOTAL QUANTITY OF WATER REMOVED (L): 26.5

SAMPLERS: SP SC
SAMPLING DATE: 11/9/98
SAMPLE TYPE: Grab
SAMPLE BOTTLE IDs: BN-13-EP-MW003
SAMPLE PARAMETERS:

SAMPLING TIME (START/END): 1345 - 1350
DECONTAMINATION FLUIDS USED: none
SAMPLE PRESERVATIVES: HCL

COMMENTS AND OBSERVATIONS: 1239 cleaned out cup

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project No.: 29600477503	Date: 11/9/98
Well ID: MW-23HA	Field Personnel:	

Parameter	6	7	8	9	10	11
Time (min.)	1300	1305	1310	1315	1320	1325
Depth to Water (ft)	21.02	21.02	21.02	21.02	21.02	21.02
Purge Rate (L/min)	0.3	0.3	0.3	0.3	0.3	0.3
Volume Purged (L)	11.5	13.00	14.5	16.0	17.5	19
pH	6.64	6.65	6.67	6.65	6.65	6.64
Temperature (°C)	9.10	9.11	9.15	9.20	9.22	9.23
Conductivity (µmhos/cm)	43	44	45	45	43	57
Dissolved Oxygen (mg/L)	9.73	9.61	9.63	9.62	9.62	9.62
Turbidity (NTU)	79.1	80	53	57	50	50
Eh (mv)	89	92	93	95.8	96	97

Parameter	12	13	14	15	16	17
Time (min)	1330	1335	1340			
Depth to Water (ft)	21.02	21.02	21.02			
Purge Rate (L/min)	0.3	0.3	0.3			
Volume Purged (L)	20.5	22.0	23.5			
pH	6.64	6.64	6.64			
Temperature (°C)	9.26	9.27	9.27			
Conductivity (µmhos/cm)	45	41	42			
Dissolved Oxygen (mg/L)	9.63	9.66	9.62			
Turbidity (NTU)	38	38	39			
Eh (mv)	99	101	100			

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-231-B
WELL CONDITION: Good

PROJECT NUMBER: 29600477503
WELL LOCK STATUS: locked
WEATHER: Overcast, 50

GAUGE DATE: 11-9-98
SOUNDING METHOD: Slope indicator
STICK UP/DOWN (ft): 3.00

GAUGE TIME: ~~11-9-98~~ 1345
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2

PURGE DATE: 11-9-98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1347
FIELD PERSONNEL: SC, SD
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 57.86
B. DEPTH TO WATER (ft): 25.23
C. LIQUID DEPTH (ft) (A-B): 32.63

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 19.74
F. THREE WELL VOLUMES (L) (E*3): 59.22

Parameter	Beginning	1	2	3	4	5
Time (min)	1348	1350	1355	1400	1405	1410
Depth to Water (ft)	25.80	25.75	25.75	25.75	25.74	25.74
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	0.2	0.6	~~0.8~~ 1.0	1.2	1.4	1.6
pH	6.41	6.4	6.39	6.37	6.37	6.37
Temperature (°C)	7.85	8.25	9.14	9.87	10.05	10.13
Conductivity (μmhos/cm)	51	51	68	50	52	52
Dissolved Oxygen (mg/L)	11.02	10.98	11.00	11.03	11.01	11.00
Turbidity (NTU)	155	139	84	34	24	21
Eh (mv)	108	107	105.6	107	108	110

TOTAL QUANTITY OF WATER REMOVED (L): 11.6

SAMPLERS: SC, SD
SAMPLING TIME (START/END): 1440 - 1445
SAMPLING DATE: 11-9-98
DECONTAMINATION FLUIDS USED: none
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN-13-EP-MW005
SAMPLE PARAMETERS: VOC

COMMENTS AND OBSERVATIONS:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project No.: 2960047	Date: 11-9-98
Well ID: MW 231-B	Field Personnel: SC, SD	

Parameter	6	7	8	9	10	11
Time (min.)	1415	1420	1425	1430	1435	
Depth to Water (ft)	25.72	25.72	25.70	25.70	25.70	
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	
Volume Purged (L)	5.6	6.6	7.6	8.6	9.6	
pH	6.37	6.37	6.37	6.37	6.37	
Temperature (°C)	10.97	10.97	10.91	10.91	10.91	
Conductivity (μmhos/cm)	51	52	53	53	52	
Dissolved Oxygen (mg/L)	10.97	10.90	10.97	10.91	10.91	
Turbidity (NTU)	12.0	11.0	9	9	8	
Eh (mv)	111	113	112	113	113	

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-303
WELL CONDITION: good

PROJECT NUMBER: 296047
WELL LOCK STATUS: good
WEATHER: Sunny, 50°

GAUGE DATE: 11-10-98
SOUNDING METHOD: Slope Indicator
STICK UP/DOWN (ft): 1.81

GAUGE TIME: 1305
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11-10-98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1309
FIELD PERSONNEL: SC, SD
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 71.62
B. DEPTH TO WATER (ft): 12.17
C. LIQUID DEPTH (ft) (A-B): 59.45

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 35.97
F. THREE WELL VOLUMES (L) (E*3): 107.91

Parameter	Beginning	1	2	3	4	5
Time (min)	1310	1315	1320	1325	1330	1335
Depth to Water (ft)	12.19	12.19	12.19	12.19	12.19	12.19
Purge Rate (L/min)	.1	.1	.1	.1	.1	.1
Volume Purged (L)	.1	.6	1.1	1.6	2.1	2.6
pH	7.66	7.85	7.92	7.95	7.96	7.96
Temperature (°C)	8.34	8.02	7.80	7.89	8.02	8.09
Conductivity (µmhos/cm)	160	162	162	163	160	160
Dissolved Oxygen (mg/L)	2.26	1.38	.53	.36	.30	.29
Turbidity (NTU)	29	2	2	2	2	2
Eh (mv)	97	-54	-126	-160	-180	-183

TOTAL QUANTITY OF WATER REMOVED (L): 5.6

SAMPLERS: SD, SC
SAMPLING DATE: 11-10-98
SAMPLE TYPE: Grab
SAMPLE BOTTLE IDs: BN-13-EP013
SAMPLE PARAMETERS: VOC

SAMPLING TIME (START/END): 1400-1405
DECONTAMINATION FLUIDS USED: None
SAMPLE PRESERVATIVES: HCL

COMMENTS AND OBSERVATIONS:
ph check OK
water containerized run through treatment plant

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project No.: 2960047	Date: 10-11-98
Well ID: MW-303	Field Personnel: SD, SC	

Parameter	6	7	8	9	10	11
Time (min.)	1340	1345	1350	1355		
Depth to Water (ft)	12.19	12.19	12.19	12.19		
Purge Rate (L/min)	.1	.1	.1	.1		
Volume Purged (L)	3.1	3.6	4.1	4.6		
pH	7.96	7.96	7.96	7.96		
Temperature (°C)	8.13	8.30	8.34	8.36		
Conductivity (µmhos/cm)	159	157	160	160		
Dissolved Oxygen (mg/L)	.27	.20	.21	.20		
Turbidity (NTU)	2	0	0	0		
Eh (mv)	-206	-214	-216	-217		

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (µmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600.47.7503
Well ID:	MW-305	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Rain/Wind ± 40

Gauge Date:	11/11/98	Gauge Time:	0925
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	2.70	Well Diameter (in.):	2"

Purge Date:	11/11/98	Purge Time:	0929
Purge Method:	Low Flow	Field Personnel:	RS/FV
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	54.12	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	13.15	C. Well Volume (L)	24.79
E. Liquid Depth (ft) (A-B)	40.97	E. Three Well Volumes (L)	74.37

Parameter	Beginning	1	2	3	4	5
Time (min.)	0932	0937	0942	0947	0952	0957
Depth to Water (ft)	13.96	14.10	14.10	14.10	14.26	14.26
Purge Rate (l/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	1.6	1.6	2.6	3.6	4.6	5.6
pH	7.56	7.67	7.81	7.85	7.87	7.88
Temperature (°C)	8.39	8.65	9.02	9.20	9.25	9.21
Conductivity (µmhos/cm)	149	151	151	180	159	153
Dissolved Oxygen (mg/L)	0.30	0.30	0.62	.36	.32	.29
Turbidity (NTU)	16	149	5	Ø	Ø	Ø
eH (mV)	186	183	182	181	180	179

Total Quantity of Water Removed (L):	9.2		
Samplers:	RS/FV	Sampling Time (Start/End):	1010-1015
Sampling Date:	11/11/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-MW017		
Sample Parameters:	VOC	MS/MSD	
Comments and Observations:	0937 - Dump Flow Cup		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	NAS Brunswick	Project No.: 29600.47.7503	Date: 11/11/98
Well ID:	MW-305	Field Personnel:	KS/FY

Parameter	6	7	8	9	10	11
Time (min.)	1000	1003	1006			
Depth to Water (ft)	14.26	14.26	14.26			
Purge Rate (L/min)	.2	.2	.2			
Volume Purged (L)	6.2	6.8	7.4			
pH	7.90	7.92	7.94			
Temperature (°C)	9.36	9.40	9.43			
Conductivity (μmhos/cm)	153	151	152			
Dissolved Oxygen (mg/L)	0.38	0.39	0.37			
Turbidity (NTU)	Ø	Ø	Ø			
Eh (mv)	178	179	177			

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600.47.1503
Well ID:	MW-306	Well Lock Status:	locked
Well Condition:	Good	Weather:	Cloudy ± 40

Gauge Date:	11/11/98	Gauge Time:	1256
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	2.35	Well Diameter (in.):	2"

Purge Date:	11/11/98	Purge Time:	1300
Purge Method:	Low Flow	Field Personnel:	CS/FV
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	56.98	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	18.54	C. Well Volume (L)	23.26
E. Liquid Depth (ft) (A-B)	38.44	E. Three Well Volumes (L)	69.78

Parameter	Beginning	1	2	3	4	5
Time (min.)	1308	1313	1318	1323	1328	1333
Depth to Water (ft)	18.54	18.54	18.54	18.64	18.64	18.64
Purge Rate (l/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	1.6	2.6	3.6	4.6	5.6	6.6
pH	4.86	5.28	5.59	5.69	5.72	5.74
Temperature (°C)	9.18	9.36	9.54	9.60	9.65	9.66
Conductivity (μmhos/cm)	48	47	48	47	47	48
Dissolved Oxygen (mg/L)	11.38	10.61	10.52	10.50	10.50	10.50
Turbidity (NTU)	47	30	10	4	Ø	Ø
eH (mV)	198	198	199	199	199	200

Total Quantity of Water Removed (L):	8.4		
Samplers:	CS/FV	Sampling Time (Start/End):	1336-1342
Sampling Date:	11/11/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-MW01920		
Sample Parameters:	VOC		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	24600.47.1503
Well ID:	MW-208	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Sunny ± 45

Gauge Date:	11/10/98	Gauge Time:	1258
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	2.44	Well Diameter (in.):	2"

Purge Date:	11/10/98	Purge Time:	1301
Purge Method:	Low Flow	Field Personnel:	KS/BA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	72.85	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	5.44	C. Well Volume (L)	40.78
E. Liquid Depth (ft) (A-B)	67.41	E. Three Well Volumes (L)	122.34

Parameter	Beginning	1	2	3	4	5
Time (min.)	1305	1310	1315	1320	1325	1330
Depth to Water (ft)	5.44	5.44	5.68	5.68	5.74	5.74
Purge Rate (l/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	1.8	1.8	2.8	3.8	4.8	5.8
pH	7.59	7.59	7.61	7.62	7.60	7.60
Temperature (°C)	10.13	10.22	10.23	10.12	9.80	9.86
Conductivity (µmhos/cm)	640	641	642	641	633	632
Dissolved Oxygen (mg/L)	2.36	0.72	0.57	0.47	1.71	1.74
Turbidity (NTU)	Ø	Ø	Ø	137	340	36
eH (mV)	152	138	123	99	81	68

Total Quantity of Water Removed (L):	12.5		
Samplers:	KS/BA	Sampling Time (Start/End):	1400 - 1405
Sampling Date:	11/10/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-MW014		
Sample Parameters:	VOC		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAS Brunswick	Project No.: 29600.47.803	Date: 11/10/98
Well ID: MW-308	Field Personnel: KS/BA	

Parameter	6	7	8	9	10	11
Time (min.)	1335	1340	1345	1348	1351	1354
Depth to Water (ft)	5.73	5.73	5.73	5.75	5.75	5.75
Purge Rate (L/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	6.8	7.8	8.8	9.4	~~10.4~~ 9.9	10.4
pH	7.63	7.64	7.65	7.65	7.66	7.67
Temperature (°C)	9.91	10.01	10.00	9.97	9.96	9.98
Conductivity (µmhos/cm)	632	634	634	635	635	635
Dissolved Oxygen (mg/L)	0.29	0.24	0.25	0.21	0.19	0.21
Turbidity (NTU)	36	35	38	40	41	45
Eh (mv)	57	47	31	17	4	3

Parameter	12	13	14	15	16	17
Time (min)	1357					
Depth to Water (ft)	5.76					
Purge Rate (L/min)	.2					
Volume Purged (L)	10.9					
pH	7.67					
Temperature (°C)	9.93					
Conductivity (µmhos/cm)	636					
Dissolved Oxygen (mg/L)	0.22					
Turbidity (NTU)	48					
Eh (mv)	3					

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: 309-B
WELL CONDITION: good

PROJECT NUMBER: 2960047
WELL LOCK STATUS: OK -
WEATHER: Rain - 50°

GAUGE DATE: 11-11-98
SOUNDING METHOD: Sleeve indicator
STICK UP/DOWN (ft): 2.42

GAUGE TIME: 1130
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11-11-98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1130
FIELD PERSONNEL: SD, BA
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 59.43
B. DEPTH TO WATER (ft): 2.06
C. LIQUID DEPTH (ft) (A-B): 57.37

D. WELL VOLUME/FT (L): 0.6009
E. WELL VOLUME (L) (C*D): 34.71
F. THREE WELL VOLUMES (L) (E*3): 104.13

Parameter	Beginning	1	2	3	4	5
Time (min)	1130	1132	1135	1140	1145	1150
Depth to Water (ft)	2.06	4.37	5.74	7.14	8.71	9.85
Purge Rate (L/min)	.3	.3	0.3	0.3	0.3	0.3
Volume Purged (L)	.3	.9	1.8	3.3	4.8	6.3
pH	8.01	8.32	8.50	8.50	8.60	8.62
Temperature (°C)	9.11	8.80	8.83	8.81	8.85	8.97
Conductivity (µmhos/cm)	200	192	193	197	194	197
Dissolved Oxygen (mg/L)	1.11	.46	.30	0.2	0.19	0.16
Turbidity (NTU)	11.1	54	62	57	35	18
Eh (mv)	160	132.3	65	35	13	-6.5

TOTAL QUANTITY OF WATER REMOVED (L): 16.6

SAMPLERS: SD, BA
SAMPLING TIME (START/END): 1220 - 1225
SAMPLING DATE: 11-11-98
DECONTAMINATION FLUIDS USED: NONE
SAMPLE TYPE: grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN-13-EP019
SAMPLE PARAMETERS: VOC
COMMENTS AND OBSERVATIONS:

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project No.: 2960047	Date: 11-11-98
Well ID: 309-B	Field Personnel: SD/BA	

Parameter	6	7	8	9	10	11
Time (min.)	1155	1200	1205	1210	1215	1218
Depth to Water (ft)	10.94	11.68	12.37	13.39	14.20	14.51
Purge Rate (L/min)	.3	.3	.3	.3	.3	.3
Volume Purged (L)	7.8	9.3	10.8	12.1	13.00	13.9
pH	8.65	8.66	8.66	8.67	8.68	8.66
Temperature (°C)	9.02	9.06	9.13	9.13	9.13	9.13
Conductivity (μmhos/cm)	196	197	197	199	198	197
Dissolved Oxygen (mg/L)	0.14	0.13	0.12	.12	.11	.11
Turbidity (NTU)	18	14	12	9	9	8
Eh (mv)	-13	-21	-28	-30	-31	-33

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS * purge rate was slow as possible

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-311
WELL CONDITION: good

PROJECT NUMBER: 2960047
WELL LOCK STATUS: good
WEATHER: sunny, 50'

GAUGE DATE: 11-10-98
SOUNDING METHOD: slope indicator
STICK UP/DOWN (ft): 2.30

GAUGE TIME: 900
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2

PURGE DATE: 11-10-98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 902
FIELD PERSONNEL: SD, SC
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 55.78
B. DEPTH TO WATER (ft): 16.79
C. LIQUID DEPTH (ft) (A-B): 38.99

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 23.59
F. THREE WELL VOLUMES (L) (E*3): 70.77

Parameter	Beginning	1	2	3	4	5
Time (min)	902	906	910	915	920	925
Depth to Water (ft)	16.79	17.69	17.72	17.76	17.75	17.75
Purge Rate (L/min)	.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	.2	0.8	1.8	2.8	3.8	4.8
pH	7.19	7.16	7.16	7.15	7.15	7.16
Temperature (°C)	8.47	8.36	8.65	9.31	9.73	9.95
Conductivity (µmhos/cm)	103	105	22	103	120	125
Dissolved Oxygen (mg/L)	1.51	.99	1.32	1.81	2.07	2.38
Turbidity (NTU)	17.1	43.4	59	50	43	40
Eh (mv)	169	164	143	116	88	65

TOTAL QUANTITY OF WATER REMOVED (L): 14.8

SAMPLERS: SD, SC
SAMPLING TIME (START/END): 1010 / 1015
SAMPLING DATE: 11/10/98
DECONTAMINATION FLUIDS USED: none
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN13EPMW008 BN13EPMWX002
SAMPLE PARAMETERS: VOC
COMMENTS AND OBSERVATIONS: ph check OK, containerized water + ran through plant.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Dome	Project No. 29600.47.7503	Date: 11/10/98
Well ID: MW-311	Field Personnel: SC, SD	

Parameter	6	7	8	9	10	11
Time (min.)	930	935	940	945	950	955
Depth to Water (ft)	17.75	17.75	17.75	17.75	17.75	17.75
Purge Rate (L/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	5.8	6.8	7.8	8.8	9.8	10.8
pH	7.16	7.17	7.17	7.17	7.17	7.16
Temperature (°C)	10.04	10.09	10.16	10.27	10.22	9.34
Conductivity (µmhos/cm)	65	87	82	106	108	91
Dissolved Oxygen (mg/L)	2.59	2.75	2.86	2.79	3.23	3.11
Turbidity (NTU)	30	23	20	14	17	29
Eh (mv)	49.6	38	34	30	23	10

Parameter	12	13	14	15	16	17
Time (min)	1000	1005				
Depth to Water (ft)	17.75	17.75				
Purge Rate (L/min)	0.2	0.2				
Volume Purged (L)	11.8	12.8				
pH	7.16	7.16				
Temperature (°C)	9.29	9.22				
Conductivity (µmhos/cm)	89	90				
Dissolved Oxygen (mg/L)	3.07	3.10				
Turbidity (NTU)	30	29				
Eh (mv)	9	9				

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600.47.7503
Well ID:	MW-313	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Sunny/Cool ±40

Gauge Date:	11/10/98	Gauge Time:	0900
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	3.35	Well Diameter (in.):	2"

Purge Date:	11/10/98	Purge Time:	0908
Purge Method:	Low Flow	Field Personnel:	KS/BA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	37.14	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	9.11	C. Well Volume (L)	16.96
E. Liquid Depth (ft) (A-B)	28.03	E. Three Well Volumes (L)	50.88

Parameter	Beginning	1	2	3	4	5
Time (min.)	0910	0915	0920	0925	0930	0935
Depth to Water (ft)	9.11	9.11	9.61	9.64	9.64	9.64
Purge Rate (l/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	.4	1.4	2.4	3.4	4.4	5.4
pH	6.69	6.50	6.66	6.76	6.89	6.94
Temperature (°C)	8.62	7.61	8.04	8.09	8.22	8.34
Conductivity (µmhos/cm)	156	133	154	171	173	170
Dissolved Oxygen (mg/L)	2.84	1.49	0.54	0.70	0.68	0.74
Turbidity (NTU)	1	1	1	1	1	1
eH (mV)	167	167	167	166	165	163

Total Quantity of Water Removed (L):	7.4		
Samplers:	KS/BA	Sampling Time (Start/End):	0939-0945
Sampling Date:	11/10/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-MW00810	KB	
Sample Parameters:	VOC		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	Eastern Plume	PROJECT NUMBER:	29600.47.7503
WELL I.D.:	MW 318	WELL LOCK STATUS:	locked
WELL CONDITION:	Good	WEATHER:	overcast, 50 overcast, 500
GAUGE DATE:	11/9/98	GAUGE TIME:	925
SOUNDING METHOD:	Slope indicator	MEASUREMENT REF:	TOC
STICK UP/DOWN (ft):	2.57	WELL DIAMETER (in.):	2
PURGE DATE:	11/9/98	PURGE TIME:	932
PURGE METHOD:	Low Flow	FIELD PERSONNEL:	SD SC
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft):	25.14	D. WELL VOLUME/FT (L):	0.1605
B. DEPTH TO WATER (ft):	5.89	E. WELL VOLUME (L) (C*D):	11.65
C. LIQUID DEPTH (ft) (A-B):	19.25	F. THREE WELL VOLUMES (L) (E*3):	34.95

Parameter	Beginning	1	2	3	4	5
Time (min)	936	940	944	948	952	956
Depth to Water (ft)	6.56	6.55	6.30	6.30	6.30	6.30
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	0.8	1.6	2.4	3.2	4.0	4.8
pH	7.41	6.84	6.64	6.57	6.52	6.48
Temperature (°C)	9.66	9.97	10.21	10.56	10.71	10.79
Conductivity (µmhos/cm)	109	62	105	67	63	60
Dissolved Oxygen (mg/L)	4.50	4.12	5.51	5.95	6.32	6.44
Turbidity (NTU)	112	24	18	14	13	13
Eh (mv)	66	42	57	57	57	56

TOTAL QUANTITY OF WATER REMOVED (L): 7.2

SAMPLERS:	SD, SC	SAMPLING TIME (START/END):	1005/1008
SAMPLING DATE:	11/9/98	DECONTAMINATION FLUIDS USED:	none
SAMPLE TYPE:	Grab	SAMPLE PRESERVATIVES:	HCL
SAMPLE BOTTLE IDs:	BN13EP MW001	MS/MSD	
SAMPLE PARAMETERS:	VOC		

COMMENTS AND OBSERVATIONS:

phcheck ok

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project No.: 21600.47	Date: 11/9/98
Well ID: MW-318	Field Personnel: SDSC	

Parameter	6	7	8	9	10	11
Time (min.)	1000					
Depth to Water (ft)	6.30					
Purge Rate (L/min)	0.2					
Volume Purged (L)	5.6					
pH	6.48					
Temperature (°C)	10.82					
Conductivity (μmhos/cm)	62					
Dissolved Oxygen (mg/L)	6.56					
Turbidity (NTU)	13					
Eh (mv)	55					

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-319
WELL CONDITION: good

PROJECT NUMBER: 296.00.47
WELL LOCK STATUS: good
WEATHER: Sunny, 50°

GAUGE DATE: 11-10-98
SOUNDING METHOD: slope indicator
STICK UP/DOWN (ft): 2.30

GAUGE TIME: 1010
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11-10-98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1019
FIELD PERSONNEL: SD, SC
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 72.44
B. DEPTH TO WATER (ft): 15.09
C. LIQUID DEPTH (ft) (A-B): 57.35

D. WELL VOLUME/FT (L): 0.6005
E. WELL VOLUME (L) (C*D): 34.70
F. THREE WELL VOLUMES (L) (E*3): 104.10

Parameter	Beginning	1	2	3	4	5
Time (min)	1020	1023	1026	1029	1032	
Depth to Water (ft)	15.09	15.09	15.09	15.09	15.09	
Purge Rate (L/min)	0.1	0.1	0.1	0.1	0.1	
Volume Purged (L)	0.1	0.6	0.9	1.2	1.5	
pH	7.23	6.66	6.38	6.31	6.29	
Temperature (°C)	9.54	9.26	9.60	9.68	9.76	
Conductivity (µmhos/cm)	103	106	92	94	97	
Dissolved Oxygen (mg/L)	9.77	7.74	5.98	5.62	5.58	
Turbidity (NTU)	0	4	9	9	8	
Eh (mv)	64	75	90	94	99	

TOTAL QUANTITY OF WATER REMOVED (L): 2.8

SAMPLERS: SD, SC
SAMPLING TIME (START/END): 1040-1045
SAMPLING DATE: 11-10-98
DECONTAMINATION FLUIDS USED: none
SAMPLE TYPE: grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN-13-SD-MW009
SAMPLE PARAMETERS: VOC
COMMENTS AND OBSERVATIONS:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-330
WELL CONDITION: Good

PROJECT NUMBER: 2960047
WELL LOCK STATUS: good
WEATHER: Sunny, 50°

GAUGE DATE: 11-12-98
SOUNDING METHOD: Slope Indicator
STICK UP/DOWN (ft): 2.7

GAUGE TIME: 1240
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11-12-98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1244
FIELD PERSONNEL: SC, SD
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 36.6
B. DEPTH TO WATER (ft): 4.09
C. LIQUID DEPTH (ft) (A-B): 32.51

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 19.67
F. THREE WELL VOLUMES (L) (E*3): 59.01

Parameter	Beginning	1	2	3	4	5
Time (min)	1245	1248	1251	1254	1259	1300
Depth to Water (ft)	12.25	15.08	19.15	19.65	18.79	18.55
Purge Rate (L/min)	.5	.5	.5	.5	.2	.2
Volume Purged (L)	.5	2.0	3.5	5.0	5.6	6.2
pH	8.64	8.67	8.65	8.52	8.60	8.57
Temperature (°C)	8.68	8.98	9.63	9.73	9.47	9.52
Conductivity (μmhos/cm)	90	90	92	92	94	95
Dissolved Oxygen (mg/L)	6.10	4.14	1.37	5.04	2.19	3.17
Turbidity (NTU)	269	213	413	214	214	214
Eh (mv)	-27	-31	-46	-41	-44	-47

TOTAL QUANTITY OF WATER REMOVED (L): 18.2

SAMPLERS: SD, SC
SAMPLING DATE: 11-12-98
SAMPLE TYPE: grab
SAMPLE BOTTLE IDs: BN-13-EPMW0277
SAMPLE PARAMETERS: VOC

SAMPLING TIME (START/END): 1255-1300
DECONTAMINATION FLUIDS USED: None
SAMPLE PRESERVATIVES: HCL

COMMENTS AND OBSERVATIONS:

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project No.: 2960047	Date: 11-12-98
Well ID: MW-330	Field Personnel: SD, SC	

Parameter	6	7	8	9	10	11
Time (min.)	1305	1310	1315	1320	1325	1330
Depth to Water (ft)	17.50	17.20	16.94	16.85	16.85	16.85
Purge Rate (L/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	7.2	8.2	9.2	10.2	11.2	12.2
pH	8.52	8.36	8.39	8.43	8.52	8.67
Temperature (°C)	9.57	9.46	9.39	9.33	9.31	9.33
Conductivity (μmhos/cm)	93	93	91	92	96	91
Dissolved Oxygen (mg/L)	3.52	3.09	2.82	3.33	2.78	2.71
Turbidity (NTU)	457	310	313	304	318	253
Eh (mv)	-94	-112	-120	-134	-140	-146

Parameter	12	13	14	15	16	17
Time (min)	1335	1340	1345	1350		
Depth to Water (ft)	16.85	16.85	16.85	16.85		
Purge Rate (L/min)	.2	.2	.2	.2		
Volume Purged (L)	13.2	14.2	15.2	16.2		
pH	8.68	8.73	8.77	8.79		
Temperature (°C)	9.76	9.39	9.40	9.43		
Conductivity (μmhos/cm)	91	91	91	91		
Dissolved Oxygen (mg/L)	2.66	2.66	2.66	2.67		
Turbidity (NTU)	223	213	205	211		
Eh (mv)	-146	-146	-146	-146		

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAS Brunswick
WELL I.D.: MW-331
WELL CONDITION: Good

PROJECT NUMBER: 29600.47
WELL LOCK STATUS: Locked
WEATHER: Sunny Cool ±45

GAUGE DATE: 11/12/98
SOUNDING METHOD: Slope Indicator
STICK UP/DOWN (ft):

GAUGE TIME: 1320
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11/12/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0.0 End: 0.0

PURGE TIME: 1325
FIELD PERSONNEL: KS/BA
WELL MOUTH VOCs (ppm): Start: 0.0 End: 0.0

WELL VOLUME

A. WELL DEPTH (ft): 33.4
B. DEPTH TO WATER (ft): 3.46
C. LIQUID DEPTH (ft) (A-B): 29.94

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 18.11
F. THREE WELL VOLUMES (L) (E*3): 54.33

Parameter	Beginning	1	2	3	4	5
Time (min)	1340	1343	1346	1349	1352	1355
Depth to Water (ft)	3.46	3.46	3.84	3.84	3.64	3.64
Purge Rate (L/min)	~~1.8~~	~~1.8~~ .8	.8	.8	.8	.8
Volume Purged (L)	12	14.4	16.8	19.2	21.6	24.0
pH	6.46	6.39	6.33	6.32	6.31	6.31
Temperature (°C)	8.95	8.96	8.98	8.98	9.00	9.00
Conductivity (μmhos/cm)	895	884	876	870	867	866
Dissolved Oxygen (mg/L)	0.69	0.67	0.69	0.70	0.72	0.72
Turbidity (NTU)	Ø	Ø	Ø	Ø	Ø	Ø
Eh (mv)	198	199	200	201	202	201

TOTAL QUANTITY OF WATER REMOVED (L): 31.2

SAMPLERS: KS/BA
SAMPLING DATE: 11/12/98
SAMPLE TYPE: Grab
SAMPLE BOTTLE IDs: BN-13-EP-MW026
SAMPLE PARAMETERS: VOC

SAMPLING TIME (START/END): 1357-1404
DECONTAMINATION FLUIDS USED: DI
SAMPLE PRESERVATIVES: HCL

COMMENTS AND OBSERVATIONS: pump rate down as low as possible

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-332
WELL CONDITION: Good

PROJECT NUMBER: 29600 47.7503
WELL LOCK STATUS: Good
WEATHER: partly cloudy, cool

GAUGE DATE: 11/12/98
SOUNDING METHOD: slope indicator
STICK UP/DOWN (ft):

GAUGE TIME: 1140
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11/12/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1143
FIELD PERSONNEL: KS, BDA
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 18.60
B. DEPTH TO WATER (ft): 12.22
C. LIQUID DEPTH (ft) (A-B): 6.38

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 3.86
F. THREE WELL VOLUMES (L) (E*3): 11.58

Parameter	Beginning	1	2	3	4	5
Time (min)	1145	1150	1155	1200	1205	1208
Depth to Water (ft)	12.22	12.31	12.19	12.20	12.20	12.20
Purge Rate (L/min)	.3	.3	.3	.3	.3	.3
Volume Purged (L)	.6	2.1	3.6	5.1	6.6	8.1
pH	5.11	5.94	5.99	6.07	6.11	6.12
Temperature (°C)	10.87	11.60	11.72	12.22	12.35	12.37
Conductivity (μmhos/cm)	35	33	32	34	33	35
Dissolved Oxygen (mg/L)	8.44	8.18	8.14	8.15	8.10	8.10
Turbidity (NTU)	1	0	0	0	0	0
Eh (mv)	165	170	171	175	179	180

TOTAL QUANTITY OF WATER REMOVED (L): 10.2

SAMPLERS: KS, BA
SAMPLING DATE: 11/12/98
SAMPLE TYPE: Grab
SAMPLE BOTTLE IDs: BN-EP-13-MW024 and BN-EP-13-MWXD4 (Duplicate)
SAMPLE PARAMETERS: VOC by 8260

SAMPLING TIME (START/END): 1210 - 1215
DECONTAMINATION FLUIDS USED: DI water
SAMPLE PRESERVATIVES: HCL

COMMENTS AND OBSERVATIONS:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAS Brunswick
WELL I.D.: MW-333
WELL CONDITION: Good

PROJECT NUMBER: 296600.47.7503
WELL LOCK STATUS: Locked
WEATHER: Sunny ± 40

GAUGE DATE: 11/12/98
SOUNDING METHOD: Slope Indicator
STICK UP/DOWN (ft):

GAUGE TIME: 1005
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11/12/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0.0 End: 0

PURGE TIME: 1010
FIELD PERSONNEL: KS/BA
WELL MOUTH VOCs (ppm): Start: 0.0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 46.0
B. DEPTH TO WATER (ft): 11.57
C. LIQUID DEPTH (ft) (A-B): 28.43

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 17.20
F. THREE WELL VOLUMES (L) (E*3): 51.60

Parameter	Beginning	1	2	3	4	5
Time (min)	1012	1017	1022	1027	1032	1037
Depth to Water (ft)	11.57	13.21	13.21	13.59	13.59	13.59
Purge Rate (L/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	.4	1.4	2.4	3.4	4.4	5.4
pH	5.07	6.59	6.81	5.68	6.73	6.82
Temperature (°C)	8.08	8.90	9.15	9.39	9.45	9.47
Conductivity (μmhos/cm)	187	181	181	158	154	156
Dissolved Oxygen (mg/L)	0.89	5.60	5.20	1.01	4.78	4.65
Turbidity (NTU)	66.3	42	124	70	62	68
Eh (mv)	218	209	204	195	180	174

TOTAL QUANTITY OF WATER REMOVED (L): 9.6

SAMPLERS: KS/BA
SAMPLING TIME (START/END): 1056 / 1058
SAMPLING DATE: 11/12/98
DECONTAMINATION FLUIDS USED: DI
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN-13-EP-MW022
SAMPLE PARAMETERS: VOC

COMMENTS AND OBSERVATIONS:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAS Brunswick	Project No.: 21600.47.7503 Date: 11/12/98
Well ID: MW-333	Field Personnel: CS/BA

Parameter	6	7	8	9	10	11
Time (min.)	1042	1047	1052			
Depth to Water (ft)	13.47	13.47	13.47			
Purge Rate (L/min)	.2	.2	.2			
Volume Purged (L)	6.4	7.4	8.4			
pH	7.07	7.13	7.15			
Temperature (°C)	9.59	9.63	9.65			
Conductivity (μmhos/cm)	154	154	156			
Dissolved Oxygen (mg/L)	0.38	0.37	0.36			
Turbidity (NTU)	Ø	Ø	Ø			
Eh (mv)	138	127	124			

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-334
WELL CONDITION: good

PROJECT NUMBER: 29600.427503
WELL LOCK STATUS: locked
WEATHER: Sunny, 50

GAUGE DATE: 11/12/98
SOUNDING METHOD: Slope indicator
STICK UP/DOWN (ft): 2.85

GAUGE TIME: 1015
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2

PURGE DATE: 11/12/98
PURGE METHOD: peristaltic
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1024
FIELD PERSONNEL: SC, SD
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 47.8
B. DEPTH TO WATER (ft): 11.95
C. LIQUID DEPTH (ft) (A-B): 35.81

D. WELL VOLUME/FT (L): 0.605
E. WELL VOLUME (L) (C*D): 21.67
F. THREE WELL VOLUMES (L) (E*3): 65.01

Parameter	Beginning	1	2	3	4	5
Time (min)	1025	1030	1035	1040	1045	1050
Depth to Water (ft)	13.89	13.25	15.94	16.09	16.72	16.66
Purge Rate (L/min)	.3	.3	.3	.3	.3	.3
Volume Purged (L)	.3	1.8	3.3	4.8	6.1	7.6
pH	8.33	8.41	8.45	8.33	8.29	8.26
Temperature (°C)	9.17	9.30	8.82	8.81	8.75	8.71
Conductivity (µmhos/cm)	142	145	143	144	147	146
Dissolved Oxygen (mg/L)	8.53	9.44	6.8	8.27	8.64	9.20
Turbidity (NTU)	261	214	213	241	410	440
Eh (mv)	98	58	9.3	-80	-108	-117

TOTAL QUANTITY OF WATER REMOVED (L): 16.6

SAMPLERS: SD, SC
SAMPLING TIME (START/END): 1115-1120
SAMPLING DATE: 11-12-98
DECONTAMINATION FLUIDS USED: NONE
SAMPLE TYPE: grab
SAMPLE PRESERVATIVES: HCl
SAMPLE BOTTLE IDs: BIV-13EPAMW025
SAMPLE PARAMETERS: VOC
COMMENTS AND OBSERVATIONS: peristaltic pump

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project No.: 2960047	Date: 11-12-98
Well ID: MW-334	Field Personnel: SD, SC	

Parameter	6	7	8	9	10	11
Time (min.)	1055	1100	1105	1108	1109	
Depth to Water (ft)	16.57	16.59	16.58	16.68	16.62	
Purge Rate (L/min)	.3	.3	.3	.3	.3	
Volume Purged (L)	9.1	10.6	11.5	12.4	13.3	
pH	8.27	8.27	8.27	8.27	8.26	
Temperature (°C)	8.78	8.70	8.68	8.63	8.68	
Conductivity (μmhos/cm)	148	148	148	148	148	
Dissolved Oxygen (mg/L)	9.13	8.77	8.69	8.78	8.82	
Turbidity (NTU)	368	284	246	226	233	
Eh (mv)	-126	-130	-131	-131	-132	

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	296000.47.7501
Well ID:	MW-1164	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Rain ±40

Gauge Date:	11/11/98	Gauge Time:	1058
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	2.25	Well Diameter (in.):	2"

Purge Date:	11/11/98	Purge Time:	1100
Purge Method:	Low Flow	Field Personnel:	~~TOE~~ CS/FV
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	27.55	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	11.88	C. Well Volume (L)	9.48
E. Liquid Depth (ft) (A-B)	15.67	E. Three Well Volumes (L)	28.44

Parameter	Beginning	1	2	3	4	5
Time (min.)	1104	1109	1114	1119	1124	1129
Depth to Water (ft)	11.88	11.91	11.91	11.92	11.92	11.92
Purge Rate (l/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	1.8	1.8	2.8	3.8	4.8	5.8
pH	4.32	5.56	5.76	5.84	5.89	5.92
Temperature (°C)	13.08	14.02	14.17	14.25	14.31	14.35
Conductivity (µmhos/cm)	115	115	109	107	104	102
Dissolved Oxygen (mg/L)	1.06	0.65	0.61	0.58	0.63	0.66
Turbidity (NTU)	Ø	~~-620~~ SC	~~6.68~~ SC	~~6.70~~ SC	~~-6.88~~ SC	~~6.70~~ SC
eH (mV)	228	215	208	199	192	187

Total Quantity of Water Removed (L):	7.0		
Samplers:	CS/FV	Sampling Time (Start/End):	1130/1135
Sampling Date:	11/11/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-MW18 & BN-13-EP-MWXD3		
Sample Parameters:	VOC		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: MW-NASB-212
WELL CONDITION: good

PROJECT NUMBER: 2960047
WELL LOCK STATUS: good
WEATHER: sunny, 50°

GAUGE DATE: 11-10-98
SOUNDING METHOD: slope indicator
STICK (UP)/DOWN (ft): 2.96

GAUGE TIME: 1405
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11-10-96
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1409
FIELD PERSONNEL: SC, SD
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 67.34
B. DEPTH TO WATER (ft): 9.58
C. LIQUID DEPTH (ft) (A-B): 57.76

D. WELL VOLUME/FT (L): 0.609
E. WELL VOLUME (L) (C*D): 34.94
F. THREE WELL VOLUMES (L) (E*3): 104.82

Parameter	Beginning	1	2	3	4	5
Time (min)	1410	1413	1416	1420	1425	1430
Depth to Water (ft)	9.58	9.66	9.66	9.66	9.66	9.70
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	0.2	0.8	1.2	2.8	3.4	4.4
pH	6.72	6.69	6.70	6.70	6.70	6.70
Temperature (°C)	10.22	9.66	9.50	9.56	9.60	9.69
Conductivity (µmhos/cm)	137	137	135	137	137	137
Dissolved Oxygen (mg/L)	2.80	1.0	0.6	0.2	0.2	0.19
Turbidity (NTU)	0	2	4	4	4	4
Eh (mv)	20	25	23	15	14	13

TOTAL QUANTITY OF WATER REMOVED (L): 6.4

SAMPLERS: SD, SC
SAMPLING TIME (START/END): 1435-1440
SAMPLING DATE: 11-10-98
DECONTAMINATION FLUIDS USED: NONE
SAMPLE TYPE: grab
SAMPLE PRESERVATIVES: HCl
SAMPLE BOTTLE IDs: BN-13-EP015
SAMPLE PARAMETERS: VOC
COMMENTS AND OBSERVATIONS: ph check ok, water containerized treated at treatment plant

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: P-106
WELL CONDITION: good

PROJECT NUMBER: 29600047
WELL LOCK STATUS: good
WEATHER: sunny, 50°

GAUGE DATE: 11-11-98
SOUNDING METHOD: Slope Indicator
STICK (UP)/DOWN (ft): 2.53

GAUGE TIME: 1345
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 2"

PURGE DATE: 11-11-98
PURGE METHOD: peristaltic
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1404
FIELD PERSONNEL: SD, BA
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 71.06
B. DEPTH TO WATER (ft): 10.71
C. LIQUID DEPTH (ft) (A-B): 60.35

D. WELL VOLUME/FT (L): ~~0.085~~ 0.085 SC
E. WELL VOLUME (L) (C*D): ~~36.57~~ 5.13 SC
F. THREE WELL VOLUMES (L) (E*3): ~~109.53~~ 15.39 SC

Parameter	Beginning	1	2	3	4	5
Time (min)	1405	1410	1415	1520	1525	1530
Depth to Water (ft)	10.71	[illegible]	—	—	—	—
Purge Rate (L/min)	.8	.6	.6	.6	.6	.6
Volume Purged (L)	.8	3.8	6.8	9.8	~~12.8~~	~~15.8~~
pH	7.30	7.16	7.17	7.31	7.38	7.32
Temperature (°C)	8.98	8.66	8.72	8.88	8.81	8.70
Conductivity (µmhos/cm)	89	94	97	98	98	98
Dissolved Oxygen (mg/L)	3.74	5.23	3.65	6.75	10.01	8.01
Turbidity (NTU)	326	151	128	18	14	7
Eh (mv)	96	99	98	94.7	93	95

TOTAL QUANTITY OF WATER REMOVED (L): 28.4

SAMPLERS: SD/BA
SAMPLING TIME (START/END): 1340-1345
SAMPLING DATE: 11-11-98
DECONTAMINATION FLUIDS USED: NONE
SAMPLE TYPE: grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN-13-EP021
SAMPLE PARAMETERS:

COMMENTS AND OBSERVATIONS: peristaltic - purge rate low as possible

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project No.: 2960047	Date: 11-11-98
Well ID: P-106	Field Personnel: SD/BA	

Parameter	6	7	8	9	10	11
Time (min.)	1533	1536	1539			
Depth to Water (ft)	—	—	10.95			
Purge Rate (L/min)	.6	.6	.6			
Volume Purged (L)	~~28~~.8	~~23~~.8	~~25~~.8			
pH	7.23	7.22	7.21			
Temperature (°C)	8.68	8.59	8.58			
Conductivity (μmhos/cm)	98	97	97			
Dissolved Oxygen (mg/L)	3.92	3.61	3.59			
Turbidity (NTU)	4	4	3			
Eh (mv)	99	99	99			

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: Eastern Plume
WELL I.D.: P111
WELL CONDITION: good

PROJECT NUMBER: 29600-47
WELL LOCK STATUS: good
WEATHER: sunny, 50°

GAUGE DATE: 11-12-98
SOUNDING METHOD: slope Indicator
STICK UP/DOWN (ft):

GAUGE TIME: 12:15
MEASUREMENT REF: TOC
WELL DIAMETER (in.): 1"

PURGE DATE: 11-12-98
PURGE METHOD: peristaltic
AMBIENT AIR VOCs (ppm) Start: 0 End: 0

PURGE TIME: 1217
FIELD PERSONNEL: SC, SD
WELL MOUTH VOCs (ppm): Start: 0 End: 0

WELL VOLUME

A. WELL DEPTH (ft): 9.99
B. DEPTH TO WATER (ft): 4.52
C. LIQUID DEPTH (ft) (A-B): 5.47

D. WELL VOLUME/FT (L): SC 0.160 SC 0.085
E. WELL VOLUME (L) (C*D): 3.37 SC 0.46
F. THREE WELL VOLUMES (L) (E*3): 9.93 SC 1.38

Parameter	Beginning	1	2	3	4	5
Time (min)	1218					
Depth to Water (ft)						
Purge Rate (L/min)	0.4					
Volume Purged (L)	0.4					
pH	6.92					
Temperature (°C)	9.98					
Conductivity (μmhos/cm)	102					
Dissolved Oxygen (mg/L)	7.77					
Turbidity (NTU)	214					
Eh (mv)	-20					

TOTAL QUANTITY OF WATER REMOVED (L): 0.8

SAMPLERS: SD, SC
SAMPLING TIME (START/END): 1230 - 1233
SAMPLING DATE: 11-12-98
DECONTAMINATION FLUIDS USED: none
SAMPLE TYPE: grab
SAMPLE PRESERVATIVES: HCL
SAMPLE BOTTLE IDs: BN-13-EPMW028
SAMPLE PARAMETERS:

COMMENTS AND OBSERVATIONS: unable to guage while purging - peristaltic pump - purge dry after 2 min - allowed to recharge - sampled

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600.47.7503
Well ID:	P-132	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Rain/Wind ±40

Gauge Date:	11/11/98	Gauge Time:	0845
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	11/11/98	Purge Time:	0848
Purge Method:	Low Flow	Field Personnel:	KS/FV
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	32.46	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	17.94	C. Well Volume (L)	19.63
E. Liquid Depth (ft) (A-B)	14.52	E. Three Well Volumes (L)	58.89

Parameter	Beginning	1	2	3	4	5
Time (min.)	0850	0855	0900	0905	0908	0911
Depth to Water (ft)	17.94	17.94	17.94	18.02	18.02	18.02
Purge Rate (l/min)	.2	.2	.2	.2	.2	.2
Volume Purged (L)	.4	1.4	2.4	3.4	4.0	4.6
pH	4.55	5.11	5.50	5.69	5.75	5.81
Temperature (°C)	10.20	10.50	10.77	11.02	11.09	11.22
Conductivity (µmhos/cm)	18	14	22	23	22	24
Dissolved Oxygen (mg/L)	12.10	11.25	10.99	10.92	10.85	10.79
Turbidity (NTU)	41	34	27	Ø	Ø	Ø
eH (mV)	201	198	202	203	203	204

Total Quantity of Water Removed (L):	6.4		
Samplers:	KS/FV	Sampling Time (Start/End):	0915-0920
Sampling Date:	11/11/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-MW016		
Sample Parameters:	VOC		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600477.7503
Well ID:	EW-01	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Cloudy ± 40

Gauge Date:	B 11/9/98	Gauge Time:	1026
Sounding Method:	Slope indicator	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	6

Purge Date:	~~NA~~ 11/9/98	Purge Time:	NA
Purge Method:	NA	Field Personnel:	KB BA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	10.48	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes (L)	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	10.28					
Depth to Water (ft)	10.48					
Purge Rate (l/min)	NA					
Volume Purged (L)	NA					
pH	6.86					
Temperature (°C)	8.82					
Conductivity (μmhos/cm)	122					
Dissolved Oxygen (mg/L)	9.55					
Turbidity (NTU)	114					
eH (mV)	194					

Total Quantity of Water Removed (L):	NA		
Samplers:	KB BA	Sampling Time (Start/End):	1030
Sampling Date:	11/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-RI001		
Sample Parameters:	VOC		
Comments and Observations:	Flow rate @ 10 gpm		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600.47.7503
Well ID:	EW-2	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Cloudy ± 40

Gauge Date:	NA	Gauge Time:	NA
Sounding Method:	NA	Measurement Ref:	NA
Stick Up/Down (ft):	NA	Well Diameter (in.):	NA

Purge Date:	NA	Purge Time:	NA
Purge Method:	NA	Field Personnel:	KS/BA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	NA

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes (L)	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	1050					
Depth to Water (ft)	NA					
Purge Rate (l/min)	NA					
Volume Purged (L)	NA					
pH	6.34					
Temperature (°C)	8.33					
Conductivity (µmhos/cm)	246					
Dissolved Oxygen (mg/L)	10.45					
Turbidity (NTU)	1					
eH (mV)	212					

Total Quantity of Water Removed (L):	NA		
Samplers:	KS/BA	Sampling Time (Start/End):	1052
Sampling Date:	11/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-RI003 @ 1052		
Sample Parameters:	VOC		
Comments and Observations:	Flow rate @ 15 gpm		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600 47.7503
Well ID:	EW-2A	Well Lock Status:	Locked
Well Condition:	GOOD	Weather:	Cloudy ± 40

Gauge Date:	NA	Gauge Time:	NA
Sounding Method:	NA	Measurement Ref:	NA
Stick Up/Down (ft):	NA	Well Diameter (in.):	NA

Purge Date:	NA	Purge Time:	NA
Purge Method:	NA	Field Personnel:	KS/BA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	NA

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes (L)	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	1038					
Depth to Water (ft)	NA					
Purge Rate (l/min)	NA					
Volume Purged (L)	NA					
pH	6.57					
Temperature (°C)	7.80					
Conductivity (µmhos/cm)	109					
Dissolved Oxygen (mg/L)	11.27					
Turbidity (NTU)	27					
eH (mV)	199					

Total Quantity of Water Removed (L):	NA		
Samplers:	KS/BA	Sampling Time (Start/End):	1042
Sampling Date:	11/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13 EP-RIC02		
Sample Parameters:	VOC		
Comments and Observations:	Flow Rate @ 1 lgpm		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600.47.7503
Well ID:	EW-3	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Cloudy ± 40

Gauge Date:	NA	Gauge Time:	NA
Sounding Method:	NA	Measurement Ref:	NA
Stick Up/Down (ft):	NA	Well Diameter (in.):	NA

Purge Date:	NA	Purge Time:	NA
Purge Method:	NA	Field Personnel:	KS | BA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	NA

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes (L)	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	1058					
Depth to Water (ft)	NA					
Purge Rate (l/min)	NA					
Volume Purged (L)	NA					
pH	5.98					
Temperature (°C)	8.16					
Conductivity (μmhos/cm)	128					
Dissolved Oxygen (mg/L)	9.98					
Turbidity (NTU)	433					
eH (mV)	211					

Total Quantity of Water Removed (L):	NA		
Samplers:	KS | BA	Sampling Time (Start/End):	1100
Sampling Date:	11/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-RI004		
Sample Parameters:	VOC		
Comments and Observations:	Flow Rate @ NONE		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600.47.7503
Well ID:	EW-05	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Cloudy ± 40

Gauge Date:	NA	Gauge Time:	NA
Sounding Method:	NA	Measurement Ref:	NA
Stick Up/Down (ft):	NA	Well Diameter (in.):	NA

Purge Date:	NA	Purge Time:	NA
Purge Method:	NA	Field Personnel:	KS/BA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	NA

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes (L)	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	1105					
Depth to Water (ft)	NA					
Purge Rate (l/min)	NA					
Volume Purged (L)	NA					
pH	6.47					
Temperature (°C)	8.23					
Conductivity (μmhos/cm)	89					
Dissolved Oxygen (mg/L)	7.74					
Turbidity (NTU)	1					
eH (mV)	198					

Total Quantity of Water Removed (L):	NA		
Samplers:	KS/BA	Sampling Time (Start/End):	1108
Sampling Date:	11/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-RI005		
Sample Parameters:	VOC		
Comments and Observations:	Flow rate @ 20 gpm		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600.47.7503
Well ID:	EasteRN Plume Influent	Well Lock Status:	NA
Well Condition:	NA	Weather:	NA

Gauge Date:	NA	Gauge Time:	NA
Sounding Method:	NA	Measurement Ref:	NA
Stick Up/Down (ft):	NA	Well Diameter (in.):	NA

Purge Date:	NA	Purge Time:	NA
Purge Method:	NA	Field Personnel:	KS/BA
Ambient Air VOCs (ppm):	NA 0.0	Well Mouth VOCs (ppm):	NA

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes (L)	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	1205					
Depth to Water (ft)	NA					
Purge Rate (l/min)	NA					
Volume Purged (L)	NA					
pH	6.63					
Temperature (°C)	11.69					
Conductivity (µmhos/cm)	146					
Dissolved Oxygen (mg/L)	11.30					
Turbidity (NTU)	1					
eH (mV)	255					

Total Quantity of Water Removed (L):	NA		
Samplers:	KS/BA	Sampling Time (Start/End):	1210
Sampling Date:	11/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-13-EP-RI0006		
Sample Parameters:	VOC		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	NAS Brunswick	Project Number:	29600.47.7503
Well ID:	Treatment Plant Effluent	Well Lock Status:	NA
Well Condition:	NA	Weather:	NA

Gauge Date:	NA	Gauge Time:	NA
Sounding Method:	NA	Measurement Ref:	NA
Stick Up/Down (ft):	NA	Well Diameter (in.):	NA

Purge Date:	NA	Purge Time:	NA
Purge Method:	NA	Field Personnel:	KS/BA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	NA

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes (L)	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	1135					
Depth to Water (ft)	NA					
Purge Rate (l/min)	NA					
Volume Purged (L)	NA					
pH	6.79					
Temperature (°C)	12.48					
Conductivity (μmhos/cm)	153					
Dissolved Oxygen (mg/L)	14.06					
Turbidity (NTU)	3					
eH (mV)	252					

Total Quantity of Water Removed (L):	NA		
Samplers:	KS/BA	Sampling Time (Start/End):	1140
Sampling Date:	11/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	NA_2SO_3
Sample Bottle IDs:	BN-13-EP-TE001 MS/MSD BN-13-EP-TEXD1		
Sample Parameters:	VOC		
Comments and Observations:			

Appendix A.3

Field Record of Surface Water and Sediment Sampling Forms

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1+3			Project Number: 29600.47.7503
Sample Location ID: SW-04			Date: 11/5/98
Sampling Time: 1245	Start:	End:	Sample Team Members: BH, SC

SURFACE WATER INFORMATION

Type of Surface Water:
(X) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location 1-2 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump ______
(X) dedicated jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 7.47 °C
( ) Conductivity 92 μmhs/cm
( ) ph 6.67 units
( ) Dissolved oxygen 13.39 mg/L
( ) Turibidity 66 NTU
( ) Eh 105 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record ______

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID ______
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
( ) ______

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor ______
( ) Color ______
( ) ______

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID ______
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
VOC	✓		✓	120ml	✓	BN13S1SW004
TALmetals	✓		✓	1L	✓	" "

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1+3			Project Number: 29600.47.7503
Sample Location ID: SW-07			Date: 11/5/98
Sampling Time: 1215	Start:	End:	Sample Team Members: SC BA

SURFACE WATER INFORMATION

Type of Surface Water:
(X) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location 2 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) dedicated jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 7.45 °C
( ) Conductivity 93 µmhs/cm
( ) ph 6.71 units
( ) Dissolved oxygen 13.16 mg/L
( ) Turbidity 36 NTU
( ) Eh 119 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
( ) Color _____
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
VOC	✓		✓	40ml	✓	BN135SW003
TAL Elements	✓		✓	1L	✓	" "

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1+3			Project Number: 29600477503
Sample Location ID: SW-08			Date: 11/5/98
Sampling Time: 1200	Start:	End:	Sample Team Members: SC, BA

SURFACE WATER INFORMATION

Type of Surface Water:
(X) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location 1 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) aerated jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 7.35 °C
( ) Conductivity 91 µmhs/cm
( ) ph 6.82 units
( ) Dissolved oxygen 12.11 mg/L
( ) Turibidity 19 NTU
( ) Eh 122 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: (X) Field Duplicate Collected
Duplicate ID BN13S1SW001
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
(·) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
( ) Color _____
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
VOC	✓		✓	40ml	✓	BN13S1SW002
TAL Elements	✓		✓	1L	✓	" "

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1+3			Project Number: 29600.47.7503
Sample Location ID: SW-09			Date: 11/5/98
Sampling Time: 1140	Start:	End:	Sample Team Members: BA, SC

SURFACE WATER INFORMATION

Type of Surface Water:
(X) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location 2 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) dedicated jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 7.09 °C
( ) Conductivity 91 µmhs/cm
( ) ph 6.88 units
( ) Dissolved oxygen 12.47 mg/L
( ) Turbidity 127 NTU
( ) Eh 128 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
(X) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe
VOC, TAL Elements

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
( ) Color _____
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
VOC	✓		✓	40ml	✓	BN13S1SW001
TAL Elements	✓		✓	2L	✓	" "

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Eastern Plume			Project Number: 29600.477503
Sample Location ID: SW-10			Date: 11/5/98
Sampling Time: 1100	Start:	End:	Sample Team Members: FV, SC, BM

SURFACE WATER INFORMATION

Type of Surface Water:
(X) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location 1 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) dedicated jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 6.52 °C
( ) Conductivity 89 µmhs/cm
( ) ph 6.77 units
( ) Dissolved oxygen 0.29 mg/L
( ) Turibidity 5 NTU
( ) Eh 129 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe

VOC

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
( ) Color _____
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
Y	Y		Y	120ml	Y	BN13EPSW004

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Eastern Plume			Project Number: 29600.47.7503
Sample Location ID: SW-11			Date: 11/5/98
Sampling Time: 1040	Start:	End:	Sample Team Members: BA, SC, FV

SURFACE WATER INFORMATION

Type of Surface Water:
(X) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location 1 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) dedicated jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 5.96 °C
( ) Conductivity 87 µmhs/cm
( ) ph 6.85 units
( ) Dissolved oxygen 11.86 mg/L
( ) Turbidity 5 NTU
( ) Eh 131 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe

VOC

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
( ) Color _____
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
X	X		X	120ml	X	BN13EPSW003

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Eastern Plume			Project Number: 29600.47.7503
Sample Location ID: SW-12			Date: 11/5/98
Sampling Time: 1000	Start:	End:	Sample Team Members: SC, BH, FV

SURFACE WATER INFORMATION

Type of Surface Water:
(X) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location 1 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
(X) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) Dedicated Jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 5.87 °C
( ) Conductivity 87 µmhs/cm
( ) ph 6.94 units
( ) Dissolved oxygen 14.27 mg/L
( ) Turibidity 18 NTU
( ) Eh 120 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
(X) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe

VOC

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
( ) Color _____
( ) _____

Field QC Data: ( ) Field Duplicate Collected ( ) MS/MSD
Duplicate ID _____

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	X		X	40ml	X	BN13EPSW001

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Eastern Plume			Project Number: 29600.47.7509
Sample Location ID: SW-13			Date: 11/5/98
Sampling Time: 1119	Start:	End:	Sample Team Members: FV, SC, BA

SURFACE WATER INFORMATION

Type of Surface Water:
(X) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location 2 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) acidcated jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Water Quality Parameters
( ) Temperature 6.77 °C
( ) Conductivity 83 µmhs/cm
( ) ph 6.73 units
( ) Dissolved oxygen 10.64 mg/L
( ) Turibidity 10 NTU
( ) Eh 131 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: (X) Field Duplicate Collected
Duplicate ID BN13EPSW001
( ) MS/MSD

Sample Location Sketch:
( ) Yes
( ) No

Method Used:
( ) Winkler
( ) Probe

VOC

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
( ) Color _____
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	✓		✓	120ml	✓	BN13EPSW005
✓	✓		✓	120ml	✓	BN13EPSW001

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Eastern Plume			Project Number: 29600.47.7503
Sample Location ID: SW-14			Date: 11/5/98
Sampling Time: 1025	Start:	End:	Sample Team Members: BA, SC, FV

SURFACE WATER INFORMATION

Type of Surface Water:
(X) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location 2.5 (ft)

Depth of Sample from Top of Water 0.5 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) dedicated Jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 6.64 °C
( ) Conductivity 82 µmhs/cm
( ) ph 6.94 units
( ) Dissolved oxygen 11.39 mg/L
( ) Turbidity 18 NTU
( ) Eh 126 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe

VOC

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
( ) Color _____
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
X	X		X	120ml	X	BN-13-EP-SW002

NOTES/SKETCH

Appendix A.4

Field Record of Seep Sampling Forms

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1+3			Project Number: 29600.47.7503
Sample Location ID: Seep-01			Date: 11/5/98
Sampling Time:	SW Start: 1315	Sed End: 1320	Sample Team Members: SC, BA

SURFACE WATER INFORMATION

Type of Surface Water:
( ) Stream ( ) River
( ) Pond/Lake (X) Seep

Water Depth and Sample Location 0.5 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) dedicated jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 8.47 °C
( ) Conductivity 517 µmhs/cm
( ) ph 6.32 units
( ) Dissolved oxygen 11.15 mg/L
( ) Turibidity 173 NTU
( ) Eh 129 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: (X) Field Duplicate Collected
Duplicate ID BN13S1LTxD1
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
(X) Composite

Sediment Type:
( ) Clay
(X) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
(X) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
(X) stainless steel bowl

Decontamination Fluids Used:
(X) Isopropyl Alcohol
( ) ASTM Type II Water
(X) Deionized Water
(X) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
(X) Color alc brown
(X) organics

Field QC Data: (X) Field Duplicate Collected
Duplicate ID BN13S1LTxD2
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
VOC TAL metals	X		X	120mL/1L	X	BN13S1LTSW1
VOC TAL metals		X		8oz	✓	BN13S1LTSD1

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1+3			Project Number: 29600.47.7503
Sample Location ID: Seep-03			Date: 11/5/98
Sampling Time:	SW ~~Start:~~ none	Sd ~~End:~~ 1340	Sample Team Members: SC, BA

SURFACE WATER INFORMATION

Type of Surface Water:
( ) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location _____ (ft)

Depth of Sample from Top of Water _____ (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Water Quality Parameters
( ) Temperature _____ °C
( ) Conductivity _____ µmhs/cm
( ) ph _____ units
( ) Dissolved oxygen _____ mg/L
( ) Turbidity _____ NTU
( ) Eh _____ mv

insufficient water

Velocity Measurements Obtained? ( ) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
( ) No

Method Used:
( ) Winkler
( ) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
(X) Composite

Sediment Type:
( ) Clay
(X) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
(X) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
(X) Stainless Steel bowl

Decontamination Fluids Used:
(X) Isopropyl Alcohol
( ) ASTM Type II Water
(X) Deionized Water
(X) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
(X) Color dk brown, orange
( ) organics

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
(X) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
VOC TAL metals		✓		8 oz	✓	BN1351LTSD2

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1+3			Project Number: 29600477503
Sample Location ID: Seep-04			Date: 11/5/98
Sampling Time:	SW Start: 1345	SW End: 1350	Sample Team Members: BA, SC

SURFACE WATER INFORMATION

Type of Surface Water:
( ) Stream ( ) River
( ) Pond/Lake (X) Seep

Water Depth and Sample Location 0.5 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) dedicated jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 7.65 °C
( ) Conductivity 793 µmhs/cm
( ) ph 6.38 units
( ) Dissolved oxygen 11.10 mg/L
( ) Turbidity 1105 NTU
( ) Eh 135 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
(X) Composite

Sediment Type:
( ) Clay
(X) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
(X) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
(X) Stainless Steel bowl

Decontamination Fluids Used:
(X) Isopropyl Alcohol
( ) ASTM Type II Water
(X) Deionized Water
(X) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
( ) Color orange brown
( ) organics

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
VOC TAL metals	✓		✓	40ml	✓	BN13S1LTSW2
VOC TAL metals		✓		8oz	✓	BN13S1LTSD3

NOTES/SKETCH

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 143			Project Number: 29600.47.7503
Sample Location ID: Seep-05			Date: 11/5/98
Sampling Time:	~~Start~~: SW 1400	~~End~~: SD 1405	Sample Team Members: BA, SC

SURFACE WATER INFORMATION

Type of Surface Water:
( ) Stream ( ) River
( ) Pond/Lake (X) Seep

Water Depth and Sample Location 0.5 (ft)

Depth of Sample from Top of Water 0.2 (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____
(X) dedicated jar

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature 8.15 °C
( ) Conductivity 733 µmhs/cm
( ) ph 6.50 units 9.32
( ) Dissolved oxygen ~~17.41~~ mg/L
( ) Turibidity 171 NTU
( ) Eh 96 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
( ) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
( ) Discrete
(X) Composite

Sediment Type:
( ) Clay
(X) Sand
(X) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
(X) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
( ) Stainless Steel Auger
(X) Stainless Steel Bowl

Decontamination Fluids Used:
(X) Isopropyl Alcohol
( ) ASTM Type II Water
(X) Deionized Water
(X) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Sample Observations:
( ) Odor _____
( ) Color orange brown
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
VOC TAL Metals	✓		✓	80ml	✓	BN1331LTSW3
VOC TAL Metals		✓		802	✓	BN1331LTSD4

NOTES/SKETCH

Appendix A.5

Field Record of Landfill Gas Monitoring

EA Engineering, Science, and Technology

FIELD RECORD OF LANDFILL GAS MONITORING

Project Name: CTMP ENGINEERING INSPECTION	Project No: 29600.47	Date: 11/24/98
Weather/Temperature/Barometric Pressure: SUNNY, CLEAR, 40°F,		
EA Personnel: BCB, MC	Equipment: GA-90	
Equipment Calibration Information:		

ID No.	Labeled/ Capped	Probe/Vent Locked	Casing/Seal Condition	Depth to Bottom (ft)	Pressure (in. ~~H2O~~ HG	Percent Methane	Percent Oxygen	Percent CO_2	Comments
1			Good		29.6	0	21.1	0	
2			Good		29.6	0	21.1	0	
3			Good		29.6	.1	21.3	0	
3			Good		29.6	0	21.1	0	
4			Good		29.6	0	21.3	0	
5			Good		29.6	0	21.4	0	
6			Good		29.6	0	22.0	0	
7			Good		29.6	0	22.1	0	
8			Good		29.6	0	21.5	0	
9			Good		29.6	.1	21.5	0	
10			Good		29.7	0	21.5	0	
11			GOOD		29.6	0	21.5	0	
12			inc		29.6	0	21.5	0	
13			~~FOOD~~.		29.7	0	21.5	0	
14			GOOD		29.7	0	21.5	0	
GAS PROBES 4			GOOD		29.7	0	8.8	1.2	
5			GOOD		29.6	0	9.1	3.6	
6			GOOD		29.7	0	10.5	.6	

Appendix B

Analytical Data Quality Review

APPENDIX B - CONTENTS

APPENDIX B

ANALYTICAL DATA QUALITY REVIEW

B.1 INTRODUCTION

This project utilized both field and analytical laboratory quality control measures to ensure that the data quality objectives presented in the project-specific Quality Assurance Project Plan (QAPP) (EA 1998) were met.

The sampling program consisted of 64 aqueous samples (of which 10 were field duplicates) (ground-water, surface water, and leachate station seep samples) collected from Sites 1 and 3 and Eastern Plume, 5 sediment samples (of which 1 was a field duplicate) collected from Sites 1 and 3, and 15 aqueous samples (of which 2 were field duplicates) collected from the direct-push sampling event. For the combined analyses for these sites, the laboratory was provided with 1 sediment and 8 aqueous sample delivery groups (SDG) which included 3 rinsate blanks, 6 trip blanks, and 1 source water blank. Field sample duplicates and source water, equipment rinsate, and trip blanks were collected at the frequency required by the QAPP.

Analytical quality control was reviewed for compliance against data quality objectives established for precision and accuracy for each sample and analysis type, including field quality control blanks (i.e., trip blank) and field sample duplication. Analytical precision was based upon the mean relative percent difference (RPD) of the matrix spike/matrix spike duplicates (MS/MSD) for organic analysis and the RPD of the laboratory duplicates for inorganic analysis. Accuracy was based upon the reported spike recoveries for the laboratory control standard (LCS), MS/MSD and system monitoring compound (SMC) recoveries (for organic analysis), and LCS and MS recoveries (for inorganic analysis).

The ability of the laboratory to extract compounds is confirmed by the recoveries of the LCS. MS/MSD and SMC recoveries measure the effect of the sample matrix on sample preparation and measurement methodology. Known quantities of target compounds are spiked into the sample matrix for the MS/MSD, and recoveries are used to measure potential bias due to matrix effects. SMC, which are structurally similar to the targeted analytes, are used to evaluate the recovery of the target compounds, which are then used as indicators for all of the analytes. The accuracy of the LCS spike recoveries is used in conjunction with the MS/MSD when evaluating organic analyses.

Analytical completeness was quantified by reviewing the number of usable results to the total number of scheduled results. Field sample completeness was quantified by reviewing the number of samples collected to the number of samples scheduled for collection.

For clarity, the following definitions are defined for use throughout Appendix B:

- **Instrument Detection Limit (IDL)**—Defined as the lowest concentration that can be determined to be statistically different from instrument background noise (instrument blank).

- **Method Detection Limit**—The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample for a given matrix. The method detection limit for soil and aqueous media are summarized in Tables B-1 and B-2, respectively.

- **Contract Required Detection Limit/Contract Required Quantitation Limit (CRDL/CRQL)**—Minimum level of detection acceptable under the contract Statement of Work in order to ensure regulatory compliance. This terminology is widely accepted in the industry as defined by the U.S. Environmental Protection Agency (EPA) contract laboratory protocols and is a standard list of inorganic analyte concentrations and organic compound concentrations on which laboratory flags and data validation qualifiers are based. These published concentrations are meant to be above the laboratory IDLs in order to ensure a level of confidence. The published CRDLs/CRQLs are specific to the Contract Laboratory Program methodology but are often used throughout industry methods. The data user should be aware that stated CRDLs/CRQLs are generic for a method and are affected for each sample by sample size, concentration, percent solids, and dilution factors.

- **Practical Quantitation Limit**—Defined as the lowest level that can be reasonably achieved within specified units of precision and accuracy during routine laboratory operating conditions.

The following sections summarize the results of this program:

Data Quality Review		Holding Time	Field Blank Contamination	Precision		Accuracy			Completeness	
				Laboratory	Field	SMC	MS/MSD	LCS	Analytical	Field
Aqueous	VOC	✓	✓B	✓	✓J	✓	✓	✓		
	Metals	✓	✓B	✓	✓J	NA	✓	✓		
Sediment	VOC	✓	✓B	✓	✓J	✓	✓	✓	100%	100%
	Metals	✓	✓B	✓	✓J	NA	✓	✓		
Direct-push Aqueous	VOC	×	✓B	✓	✓	✓	✓	✓	100%	100%

NOTE: VOC = Volatile organic compounds.
B = The data have been affected by field blank/laboratory contamination; false-positives may exist.
✓ = The data are usable as reported based on the data quality review of this quality measurement.
× = Some analyte concentrations are not usable.
NA = The quality measurement does not apply to this matrix or analytical methodology.
✓J = The data are usable, however, some analyte concentrations should be considered estimates of their true concentrations.

All volatile organic compound (VOC) and metals data for Sites 1 and 3 and Eastern Plume are usable as reported based on the accuracy and precision review provided herein. All VOC data for the direct-push sampling (with the exception of one sample) are usable as reported based on the accuracy and precision review provided herein. Major and minor sample biases are identified and a detailed description of holding time issues (Section B.2), field/laboratory blank contamination (Section B.6), precision issues (Section B.3), accuracy issues (Section B.4), and analytical and field completeness (Section B.5) are provided below.

B.1.1 Field Sampling Program Quality Control

A field quality control duplicate sample was collected for each matrix (i.e., sediment and water) and analyzed for the same parameters as the environmental samples to determine field sampling precision. The potential for cross-contamination of volatile organics during sample storage and shipment was monitored by trip blanks which were shipped with each sample cooler containing aqueous samples. The trip blanks were analyzed for VOC by EPA SW-846, Method 8260B. To document the effectiveness of decontamination protocols, rinsate blank samples were taken by running de-ionized water through non-dedicated sampling equipment into the appropriate sample containers and analyzing for the same parameters as the environmental samples. In addition, a source water blank was analyzed to assess the chemical quality of the water used in the decontamination process. The source water blank was also analyzed for the same parameters as the environmental samples.

B.1.2 Laboratory Analytical Quality Control Program

Ground-water samples collected at Sites 1 and 3, the Eastern Plume, and for the direct-push event were analyzed for Target Compound List (TCL) VOC plus a library search of the first 15 tentatively identified compounds by EPA Method 8260B. Surface water and leachate station seep and sediment samples were collected at Sites 1 and 3 for analysis of TCL VOC plus a library search of the first 15 tentatively identified compounds by EPA Method 8260B and Target Analyte List (TAL) elements, including metals by inductively coupled plasma (EPA Method 6010A) and mercury by cold vapor atomic adsorption (EPA Method 7471A/7470M[1]). Arsenic, selenium, thallium, and chromium were analyzed by inductively coupled plasma (EPA Method 6010) rather than graphite furnace atomic adsorption (EPA 7000 series methods) as specified in Draft LTMP (EA 1998); the precision and accuracy objectives and reporting requirements identified in the LTMP were met. The quality control measures specified in the SW-846 methodology (MS/MSD, SMC, LCS, and laboratory duplicates), as well as those in the QAPP (EA 1998), were used by the laboratory to establish proper analytical quality control.

The range of results for the data quality objective parameters is discussed for each sample matrix in the sections below.

1. To use a microwave digestion versus water bath.

B.2 SAMPLE HOLDING TIMES

The results for 5 direct-push samples should be considered bias low and 1 direct-push sample was rejected based on holding time criteria. Holding times (defined as from date of sample collection to date of sample preparation/analyses) were compared against the maximum holding times identified in the quality control requirements of the referenced analytical methods. The holding times were met for all methods and sample matrixes with the exception of volatile organic analyses for the direct-push event. The following table summarizes the affected samples:

Sample	Method Holding Time for VOC	Exceedance of Acceptance Criteria
DP-EP-05, 22-26 ft DL	14 days	14 days
Equipment Rinsate RE	14 days	14 days
Equipment Rinsate DL	14 days	26 days
DP-EP-07, 38-42 ft DL	14 days	14 days
DP-EP-06, 39-43 ft DL	14 days	13 days
DP-EP-02, 33-37 ft RE	14 days	1 day
DP-EP-03, 78-82 ft RE	14 days	2 days

NOTE: DL = This suffix indicates sample reanalysis at a dilution.
RE = This suffix indicates sample reanalysis to confirm matrix interference.
VOC = Volatile organic compounds.

The usability of the volatile organic data for the following: diluted samples DP-EP-05 (22-26 ft), DP-EP-07 (38-42 ft), and DP-EP-06 (39-43 ft); reanalyzed samples equipment rinsate; DP-EP-002 (33-37 ft), and DP-EP-03 (78-82 ft) are unaffected, in that the holding time did not exceed 14 days. However, the reported volatile organic concentrations should be considered estimations of the true sample concentration for the above listed samples. The analytical results for these samples may be bias slightly low.

The usability of the volatile organic data for diluted Equipment Rinsate is unusable due the gross exceedance of the 14-day holding time requirement. The analytical results for this sample should not be used, instead the analytical results from the initial analysis should be used.

B.3 PRECISION

B.3.1 Volatile Organic Compounds

The surface water, monitoring wells, combined effluent, seep sediments, and direct-push sample results are usable as reported based on precision criteria. Five VOC were used to qualify the MS/MSD RPD. The control limits identified in the QAPP were used to evaluate the data. MS/MSD sets were performed on Samples MW-2101 and SW-09 from Sites 1 and 3; MW-305, MW-318, SW-12, and Combined Effluent from Eastern Plume; sediment seep Sample LT-01 from Sites 1 and 3; and DP-EP-05 (22-26 ft) and DP-EP-01 (39-43 ft) from the direct-push event.

The surface water, monitoring wells, and combined effluent sample MS/MSD RPDs (from Sites 1 and 3 and Eastern Plume) met acceptance criteria, therefore, the analytical precision was determined to be acceptable and the aqueous VOC data usable as reported based on the review of laboratory precision. All laboratory prepared spikes (performed in both method blanks and LCS) had acceptable RPDs.

The ground-water sample MS/MSD RPDs (from the direct-push event) were within the acceptance criteria with the exception of 1,1-dichloroethene (89 percent) in Sample DP-EP-05 (22-26 ft). The RPD for 1,1-dichloroethene in the sample mentioned above did not indicate significant imprecision, therefore, the data are usable as reported. The analytical precision was determined to be acceptable and the aqueous VOC data usable as reported based on the review of laboratory precision.

The solid seep sample MS/MSD RPDs from Sites 1 and 3 met acceptance criteria, therefore, the analytical precision was determined to be acceptable and the sediment VOC data usable as reported based on the review of laboratory precision.

B.3.2 Target Analyte List Metals

Though the analytical sequence and quality control requirements were met by the laboratory, however, laboratory duplicates were not performed on either of the matrices, therefore, analytical precision for these matrices could not be evaluated by the data Reviewer.

B.4 ACCURACY

B.4.1 Volatile Organic Compounds

The surface water, monitoring well, combined effluent, and seep sediment results are usable as reported. Two compounds in 1 direct-push sample should be considered bias low. The other analytical results for the direct-push samples are usable as reported. Three SMCs are normally used to measure the ability of the laboratory to purge the target analytes from the environmental samples, however, the laboratory reported an additional SMC. The SMC control limits for the aqueous and sediment samples identified in the QAPP and reported by the laboratory were identical for the first three SMC. The fourth SMC, dibromofluoromethane, was not listed in the QAPP; therefore, laboratory limits were used to evaluate the data.

The aqueous and sediment SMC recoveries were within the QAPP control limits, therefore, the volatile organic analyte results are usable as reported for both Sites 1 and 3 and Eastern Plume, based on the review of SMC accuracy.

The aqueous direct-push SMC recoveries were within the QAPP control limits, with the exception of dibromofluoromethane in the diluted Equipment Rinsate sample (85 percent); 1,2-dichloroethane-d4 in the diluted Equipment Rinsate sample (71 percent); toluene-d8 in both the reanalysis and diluted Equipment Rinsate sample (86 and 83 percent, respectively); and

bromofluorobenzene in Samples DP-EP-02 (11-15 ft, 125 percent), DP-EP-03 (78-82 ft, 117 percent), and the reanalysis of DP-EP-03 (78-82 ft, 118 percent). The laboratory appropriately repeated the analysis results for these samples. The re-analysis results indicated similar results for the SMC. The re-analysis and the original analysis results for the above mentioned samples should be considered most usable and, therefore, the data are included in the summary tables. The data user should be aware that the low recoveries of this SMC indicate a possible low analytical bias due to sample matrix, and the sample data should still be considered usable

Five VOC were used to quantify the MS/MSD recoveries against QAPP control limits. The recovery limits identified in the QAPP were different than those reported by the laboratory. The data Reviewer used the QAPP limits to evaluate the data. The laboratory performed MS/MSD spikes on Samples MW-2101 and SW-09 from Sites 1 and 3; MW-305, MW-318, SW-12 and Combined Effluent from Eastern Plume; sediment seep Sample LT-01 from Sites 1 and 3; and DP-EP-05 (22-26 ft) and DP-EP-01 (39-43 ft) from the direct-push event.

The aqueous and sediment MS/MSD recoveries for Sites 1 and 3 and Eastern Plume were within the established control limits, therefore, all data are usable as reported based on the review of MS/MSD accuracy. The aqueous MS/MSD recoveries for the direct-push samples were within the established control limits with the exception of Sample DP-EP-05 (22-26 ft). The MS/MSD for Sample DP-EP-05 (22-26 ft) exhibited a low recovery for 1,1-dichloroethene (16 and 41 percent) and trichloroethene (33 and 36 percent). The data user should be aware that the positive results for trichloroethene and 1,1-dichloroethene in Sample DP-EP-05 (22-26 ft) should be considered bias low.

Five VOC are used to quantify LCS recoveries against laboratory established control limits. No LCS recovery limits are stated in the QAPP. The LCS recovery limits used are provided in Appendix C. The aqueous and sediment LCS recoveries are within laboratory established control limits, confirming the laboratory's purging efficiency for both aqueous and solid matrices. Therefore, the aqueous and sediment VOC data are usable as reported based on the review of LCS accuracy.

B.4.2 Target Analyte List Metals

All metals are usable as reported based on accuracy criteria. Nineteen TAL analytes were used to quantify MS recoveries for aqueous and sediment samples. Calcium, magnesium, potassium, and sodium were not required as spiking compounds due to the potential for these compounds to be present in the environmental samples at high concentrations. The MS samples were analyzed at the correct frequency, and the accuracy control limits used to evaluate the data were taken from the QAPP.

The laboratory performed an MS on 3 aqueous samples (Eastern Plume Combined Effluent, MW-2101, and SW-01). The MS recoveries were within the established control limits of 75-125 percent, therefore, all data are usable as reported based on the review of MS/MSD accuracy.

The laboratory performed an MS on solid seep sample LT-01. The MS recoveries for sample LT-01 were within the established control limits, therefore, all data are usable as reported based on the review of MS/MSD accuracy.

All 23 TAL analytes were used to quantify the LCS recoveries against laboratory established control limits. No LCS recovery limits were stated in the QAPP. The aqueous LCS recoveries for Sites 1 and 3, Eastern Plume, and the direct-push samples were within laboratory established control limits, confirming the laboratory's ability to perform sample digestion/distillation. The aqueous and sediment results should be considered usable based on the review of the LCS accuracy.

B.5 COMPLETENESS

Field sampling completeness was quantified by comparing the number of samples analyzed to the number of samples scheduled for collection. At Sites 1 and 3, 26 of 26 samples were collected for a field completeness of 100 percent. At Eastern Plume, 33 of 33 samples were collected for a field completeness of 100 percent. During the direct-push event, 15 of 15 samples were collected for a field completeness of 100 percent.

The field quality control blanks (e.g., trip blanks) were collected at the proper frequency. A total of 4 trip blanks were collected for Sites 1 and 3 and Eastern Plume and 2 trip blanks were collected for the direct-push event. There were 3 rinsate blanks (associated with Sites 1 and 3 and Eastern Plume) and one rinsate blank collected for the direct-push event. The rinsate blanks collected for Sites 1 and 3 included 1 rinsate blank associated with the sediment samples and 1 was associated with the surface water/seep samples. One rinsate blank was collected for the Eastern Plume in association with the surface water samples. One rinsate blank was collected for the direct-push event. The 3 rinsate samples and 1 source water blank for Sites 1 and 3 and Eastern Plume were submitted in compliance with the QAPP. The 1 rinsate sample for the direct-push event was submitted in compliance with the work plan.

Analytical completeness was quantitated by reviewing the number of acceptable analytical results to the total number of analytical results. Usable analytical data for Sites 1 and 3 and Eastern Plume were available for all analytes/compounds, therefore, there is a total analytical completeness of 100 percent. Usable analytical data for the direct-push event were available for all analytes/compounds, therefore, there is a total analytical completeness of 100 percent.

B.6 FIELD QUALITY CONTROL BLANKS

Monitoring well, surface water, seep, field blank, and direct-push samples contain results that are false-positive based on both field and method blank criteria. Field quality control blanks (rinsate blanks) were evaluated for contamination that may have been introduced during field sampling activities. Trip blanks are indicators for contamination of VOC during sample shipment. In cases where contamination exists, environmental samples should be reviewed for possible false-

positives. The field quality control blanks collected for Sites 1 and 3 and Eastern Plume included 4 trip blanks, 3 rinsate blanks, and 1 source water blank. The field quality control blanks collected for the direct-push operation include 2 trip blanks and 1 rinsate blank.

Trip blanks associated with Sites 1 and 3 and Eastern Plume were analyzed for VOC. The results of the 4 trip blanks are shown in the following table:

Compounds	Units	QT-001	QT-002	QT-003	QT-004
Carbon Disulfide	µg/L	(<1U)	0.5J	(<1U)	(<1U)
Total Xylenes	µg/L	(<1U)	1	(<1U)	(<1U)
Tetrachloroethene	µg/L	(<1U)	1	(<1U)	(<1U)
Trichloroethene	µg/L	(<1U)	2B	1B	(<1U)
Ethylbenzene	µg/L	(<1U)	0.6J	(<1U)	(<1U)
Acetone	µg/L	(<5U)	4J	3J	(<5U)
1,2-Dichlorobenzene	µg/L	(<1U)	2	(<1U)	(<1U)
1,3-Dichlorobenzene	µg/L	(<1U)	0.9J	(<1U)	(<1U)
1,4-Dichlorobenzene	µg/L	(<1U)	1	(<1U)	(<1U)
Methylene Chloride	µg/L	(<1U)	0.9JB	3B	(<1U)

NOTE: U = Not detected. Sample quantitation limits are shown as (<___U).
J = Estimated concentration below detection limit.
B = Compound detected in associated method blank.

The positive carbon disulfide result in Sample SW-14 should be considered false-positive. The carbon disulfide concentration in LT-5 was high enough not to be affected by the associated trip blank contamination. Carbon disulfide was not detected in any other aqueous environmental samples, therefore, all non-detected carbon disulfide data are unaffected.

The positive results for total xylenes in 3 samples (SW-04, SW-12, and SW-14) should be considered false-positives. Total xylenes were not detected in any other aqueous environmental samples, therefore, all non-detected total xylenes data are unaffected.

The positive results for tetrachloroethene in 2 samples (SW-12 and SW-14) should be considered false-positives. Tetrachloroethane was also detected in Sample LT-3, however, the contamination did not affect the usability of the tetrachloroethene due to the elevated sample concentration. All non-detected tetrachloroethene data are unaffected.

The positive results for ethylbenzene in 2 samples (SW-12 and SW-14) should be considered false-positives. Ethylbenzene were not detected in any other aqueous environmental samples, therefore, all non-detected total ethylbenzene data are unaffected.

The positive 1,2-dichlorobenzene results in 3 samples (SW-14, SEEP-04, and SEEP-05) should be considered false-positives, 1,2-dichlorobenzene was also detected in Samples LT-3 and LT-5, however, the contamination did not affect the usability of 1,2-dichlorobenzene due to the elevated sample concentration. All non-detected 1,2-dichlorobenzene data are unaffected.

The positive 1,3-dichlorobenzene results in Sample SW-14 should be considered false-positives; 1,3-dichlorobenzene was also detected in Sample LT-3, however, the contamination did not affect the usability of 1,3-dichlorobenzene due to the elevated sample concentration. All non-detected 1,3-dichlorobenzene data are unaffected.

The positive 1,4-dichlorobenzene results in 3 samples (SW-14, SEEP-04, and SEEP-05) should be considered false-positives; 1,4-dichlorobenzene was also detected in 4 samples (LT-1, LT-3, LT-4, and LT-5), however, the contamination did not affect the usability of 1,4-dichlorobenzene due to the elevated sample concentration. All non-detected 1,4-dichlorobenzene data are unaffected.

The positive acetone results in 4 samples (SW-04, SW-08, MW-NASB-212, and MW-303) should be considered false-positives. The acetone concentrations in 5 samples (LT-1, LT-1 DUP, LT-3, LT-4, and LT-5) were high enough not to be affected by the associated trip blank contamination. The positive acetone results in 5 samples (QT-002, QT-003, QS-001, SEEP-04, and SEEP-05) should be considered false-positive do to method blank contamination.

The positive results for trichloroethene in 5 samples (MW-303, MW-308, MW-313, MW-225A, and SEEP-03) should be considered false-positives. The trichloroethene concentrations in 6 samples (LT-3, MW-311, MW-331 DUP, MW-205, MW-207A, and MW-229A) were high enough not to be affected by the associated trip blank contamination. All non-detected trichloroethene data are unaffected. The positive trichloroethene results in 14 samples (QT-002, QT-003, SW-04, SW-08, SW-09, SW-10, SW-11, SW-12, SW-13, SW-13 DUP, SW-14, QS-003, MW-NASB-212, and MW-319) should be considered false-positives due to method blank contamination. The data quality review confirmed that the contamination reported in the method blanks was due to low level carryover from the analytical laboratory.

The positive methylene chloride results in 27 samples (QT-002, QT-003, QS-003, QS-001, QD-001, SW-04, SW-08, SW-08 DUP, SW-09, SW-10, SW-14, MW-205, MW-224, MW-303, MW-305, MW-306, MW-311, MW-311 DUP, MW-319, MW-331, MW-332, MW-332 DUP, MW-1104, MW-1104 DUP, MW-NASB-212, P-106, and P-132) should be considered false-positives due to method blank contamination. The data quality review confirmed that the contamination reported in the method blanks was due to low level carryover from the analytical laboratory. The methylene chloride concentrations in 5 samples (LT-1, LT-1 DUP, LT-3, LT-4, and LT-5) were high enough not to be affected by the associated trip blank and method blank contaminations.

The equipment rinsate blanks associated with sediment and surface water samples collected at Sites 1 and 3 and Eastern Plume were analyzed for VOC and TAL metals. The positive results of the 3 rinsate blanks (QS-001 [dedicated jar rinsate], QS-002 [equipment rinsate], and QS-003 [dedicated jar rinsate]) and the associated source water blank (QD-001) associated with Sites 1 and 3 and Eastern Plume are shown in the table below:

Compounds/Analytes	Units	QS-001	QS-002	QS-003	QD-001
Acetone	µg/L	3JB	(<5U)	(<5U)	(<5U)
Methylene Chloride	µg/L	4B	4B	4B	5B
Chloroform	µg/L	13	12	11	14
Trichloroethane	µg/L	(<1U)	(<1U)	4B	(<1U)
Barium	µg/L	0.40B*	1.9B*	NR	1.0B*
Calcium	µg/L	(<11.89U)	19.6B*	NR	27.3B*
Chromium	µg/L	(<0.63U)	0.80B*	NR	0.68B*
Iron	µg/L	29.8B*	40.7B*	NR	47.1B*
Lead	µg/L	3.0B*	3.0B*	NR	2.7
Manganese	µg/L	0.37B*	0.44B*	NR	0.61B*
Mercury	µg/L	0.04B*	0.04B*	NR	(<0.01U)
Sodium	µg/L	209	166	NR	202
Vanadium	µg/L	(<0.46U)	0.50B*	NR	(<0.46U)
Zinc	µg/L	3.3B*	2.3B*	NR	3.2B*

NOTE: J = Estimated concentration below detection limit.
B = Compound detected in associated method blank.
U = Not detected. Sample quantitation limits are shown as (<___U).
B* = Analyte concentration is between the IDL and the CRDL.
NR = Analysis not required.

The analytical results of the equipment rinsate blanks and source water blank indicate that there was minor VOC contamination present. See prior trip blank discussion for actions taken for acetone, methylene chloride, and trichloroethane contamination. The appearance of chloroform in the source water blank indicates that chloroform was a contaminant of the rinse water and not a result of poor decontamination procedures. Chloroform was not detected in any of the environmental samples and, therefore, the usability of the chloroform data were unaffected.

Analytes barium, calcium, iron, manganese, and vanadium in the samples far exceed the associated source water blank and rinsate blank contamination, therefore, samples were unaffected by barium, calcium, iron, manganese, and vanadium contamination.

Chromium was identified in both the rinsate blanks and the source water blank. The appearance of chromium in the associated source water blank indicates that this analyte is a contaminant of the rinse water and not a constituent left by poor decontamination procedures. Five samples (SW-04, SW-07, SW-08, SW-08 DUP, and SW-09) had positive concentrations of chromium within the expected range of variability of the rinsate blank contamination and should, therefore, be considered as false-positives due to rinsate blank contamination.

Lead was identified in both the rinsate blanks and the source water blank. The appearance of lead in the associated source water blank indicates that this analyte is a contaminant of the rinse water and not a constituent left by poor decontamination procedures. Seven samples (SW-09, SW-04, SW-07, SW-08, SW-08 DUP, LT-4, and LT-5) had positive concentrations of lead within the expected range of variability of the rinsate blank contamination and should, therefore, be considered as false-positives due to rinsate blank contamination.

Mercury was identified in both the rinsate blanks and the source water blank. The appearance of mercury in the associated source water blank indicates that this analyte is a contaminant of the rinse water and not a constituent left by poor decontamination procedures. Eight samples (SW-09, SW-04, SW-07, SW-08, SW-08 DUP, LT-1, LT-4, and LT-5) had positive concentrations of mercury within the expected range of variability of the rinsate blank contamination and should, therefore, be considered as false-positives due to rinsate blank contamination.

Sodium was identified in both the rinsate blanks and the source water blank. The appearance of sodium in the associated source water blank indicates that this analyte is a contaminant of the rinse water and not a constituent left by poor decontamination procedures. Five samples (LT-1, LT-1 DUP, LT-3, LT-4, and LT-5) had positive concentrations of sodium within the expected range of variability of the rinsate blank contamination and should, therefore, be considered as false-positives due to rinsate blank contamination.

Zinc was identified in both the rinsate blanks and the source water blank. The appearance of zinc in the associated source water blank indicates that this analyte is a contaminant of the rinse water and not a constituent left by poor decontamination procedures. Five samples (SW-09, SW-04, SW-07, SW-08, and SW-08 DUP) had positive concentrations of zinc within the expected range of variability of the rinsate blank contamination and should, therefore, be considered as false-positives due to rinsate blank contamination.

Trip blanks and equipment blank associated with the direct-push operation were analyzed for VOC. The results of the 2 trip blanks and equipment blank are shown in the following table:

Compounds	Units	QT-1	QT-2	Equipment Rinsate
Acetone	µg/L	3J	(<5U)	11
1,1,1-Trichloroethane	µg/L	(<1U)	(<1U)	1
NOTE: J = Estimated concentration below detection limit. U = Not detected. Sample quantitation limits are shown as (<____U).				

The analytical results of the trip blanks and equipment rinsate blank indicate that there was minor VOC contamination present. The usability of acetone data in the aqueous direct-push samples was unaffected as acetone was not detected in any of the samples: 1,1,1-trichloroethane was identified in the equipment blank, and sample DP-EP-01 (39-43 ft) had a positive concentration of 1,1,1-trichloroethane within the excepted range of variability of the rinsate blank contamination and should, therefore, be considered a false-positive result due to rinsate blank contamination. The compound 1,1,1-trichloroethane in 3 samples (DP-EP-05 [22-26 ft], DP-EP-06 [39-43 ft], and DP-EP-07 [38-42 ft]) far exceeded the associated rinsate blank contamination, therefore, samples were unaffected by 1,1,1-trichloroethane contamination.

B.7 DUPLICATE FIELD SAMPLES

Results for some analytes and compounds in the field duplicates for monitoring well, aqueous seep, and leachate sediment samples are estimated due to field duplicate criteria. Field duplicate samples are used to evaluate the overall precision for both the field and laboratory, and the

homogeneity of the sample matrix. Typically, these results have more variability than laboratory precision measurements with the extremes being noted in soil matrices. Based on EPA Region I criteria for evaluating field duplicates, the following guidelines were used to review the field duplicates taken during the sampling event. The overall precision of organic compounds was evaluated as the RPD (non-detects were defined as one-half the reporting limit) and considered acceptable at an RPD of less than 30 percent for water samples and 50 percent for soil samples. Overall precision for inorganic analytes was evaluated by reviewing the difference of the field duplicate for analytes with concentrations less than 5 times the reporting limit (the difference cannot be greater than ±2X the reporting limit for water samples or cannot be greater than ±4X reporting limit for soil samples), and by the RPD (less than 30 percent for water samples and 50 percent for soil samples) for the analytes greater than 5 times the reporting limit. Non-detects were defined as one-half the reporting limit for difference measurements. The reporting limits used to evaluate the data are based on those presented in the QAPP.

The sample locations of the field duplicated samples were not identified to the laboratory. A total of 10 samples were duplicated for Sites 1 and 3 and Eastern Plume (collected during the ground-water, surface water, sediment, seep, and treatment plant sampling programs). Each SDG had the appropriate number of duplicate field samples collected. The RPD results from the 5 field duplicate ground-water samples, 2 field duplicate surface water sample, 1 field duplicate leachate station seep sample, 1 field duplicate leachate station sediment sample, and 1 field duplicate effluent sample are shown in the tables below.

The following table shows the field duplicate results from the surface water samples associated with SDG S1SW001:

Compounds/Analytes	Units	SW-08	SW-08 DUP	RPD%	Difference
Trichloroethene	µg/L	0.78B	(<1U)	**44**	---
Acetone	µg/L	3J	(<5U)	18	---
Methylene Chloride	µg/L	6B	7B	15	---
Aluminum	µg/L	220	230	NA	10
Barium	µg/L	22.1	21.8	NA	0.3
Calcium	µg/L	8,090	7,920	2	NR
Chromium	µg/L	1.2B*	0.99B*	NA	0.21
Iron	µg/L	1,540	1,460	5	NR
Lead	µg/L	4.0B*	4.0B*	NA	0
Magnesium	µg/L	1,800	1,760	2	NR
Manganese	µg/L	251	244	3	NR
Mercury	µg/L	0.03B*	0.05B*	NA	0.02
Nickel	µg/L	1.1B*	(<0.77U)	NA	0.7
Potassium	µg/L	1,620	1,770	NA	150
Sodium	µg/L	11,600	11,500	1	NR
Vanadium	µg/L	1.5B*	1.2B*	NA	0.3
Zinc	µg/L	11.9B*	6.8B*	NA	5.1

NOTE:
B = Compound detected in associated method blank.
U = Not detected. Sample quantitation limits are shown as (<__U).
J = Estimated concentration below detection limit.
B* = Analyte concentration is between the IDL and the CRDL.
NA = Not applicable; analyte concentration was less than 5X the reporting limit.
NR = Not required; analyte concentration was greater than 5X the reporting limit and, therefore, the RPD was applied.
Results in bold indicate an exceedance of the precision requirements.
Dashes (---) indicate this column does not apply to organic analysis.

The data user should note that the results for methylene chloride and trichloroethene should be considered false-positive due to method blank contamination and, therefore, the precision criteria would not apply. All precision requirements were met for the (see Section B.6 for discussion) field duplicate analyses; the results are usable as reported.

The following table shows the field duplicate results from the surface water samples associated with SDG EPQS003:

Compound/Analyte	Units	SW-13	SW-13 DUP	RPD%
Trichloroethene	µg/L	2B	2B	0
NOTE: B = Compound detected in associated method blank.				

The data user should note that the results for trichloroethene should be considered false-positive due to method blank contamination and, therefore, the precision criteria would not apply. All precision requirements were met for the field duplicate analyses (see Section B.6 for discussion); the results are usable as reported.

The following tables show the field duplicate sample results associated with the monitoring well samples at Sites 1 and 3.

The following table shows the field duplicate sample results associated with SDG S1MW001:

Compounds/Analytes	Units	MW-219	MW-219 DUP	RPD%	Difference
Aluminum	µg/L	611	1,040	**52**	NR
Barium	µg/L	6.8	8.5	NA	1.7
Calcium	µg/L	11,600	11,200	3.5	NR
Chromium	µg/L	12.8B*	15.0	NA	2.2
Cobalt	µg/L	(<2.74U)	2.8	NA	1.4
Copper	µg/L	(<1.4U)	3.5	NA	2.8
Iron	µg/L	1,420	2,100	**39**	NR
Lead	µg/L	(<1.31U)	2.0B*	NA	1.3
Magnesium	µg/L	4,100	4,110	0.2	NR
Manganese	µg/L	19.3	30.1	NA	**10.8**
Mercury	µg/L	0.07B*	0.07B*	NA	0
Nickel	µg/L	12.4B*	6.0B*	NA	6.4
Potassium	µg/L	1,380	1,480	NA	100
Sodium	µg/L	7,730	7,340	5	NR
Vanadium	µg/L	(<3.24U)	4.7B*	NA	3.1
Zinc	µg/L	5.6	7.4B*	NA	1.8

NOTE:
NR = Not required; analyte concentration was greater than 5X the reporting limit and, therefore, the RPD was applied.
B* = Analyte concentration is between the IDL and the CRDL.
NA = Not applicable; analyte concentration was less than 5X the reporting limit.
U = Not detected. Sample quantitation limits are shown as (<__U).
Results in bold indicate an exceedance of the precision requirements.

All precision requirements were met for the field duplicate analyses with the exception of aluminum, iron, and manganese. The results for aluminum, iron, and manganese should be considered estimations of their true concentrations in Sample MW-219 due to the lack of precision between field sample duplicates.

The following table shows the organic and inorganic field duplicate sample results associated with the aqueous seep samples in SDG S1SW001:

Compounds/Analytes	Units	SEEP-1	SEEP-1 DUP	RPD%	Difference
1,1-Dichloroethane	µg/L	1	1	0	---
1,1,2,2-Tetrachloroethane	µg/L	4	4	0	---
1,1,1-Trichloroethane	µg/L	5	6	18	---
Aluminum	µg/L	14,000	7,220	**64**	NR
Arsenic	µg/L	49.5	29	NA	20.5
Barium	µg/L	988	950	9	NR
Beryllium	µg/L	7.0	4.4B*	NA	2.6
Cadmium	µg/L	3.9B*	3.0B*	NA	0.9
Calcium	µg/L	186,000	161,000	14	NR
Chromium	µg/L	24.7	13.7B*	NA	11
Cobalt	µg/L	224	129	NA	**95**
Copper	µg/L	45.6	30.4	NA	15.2
Iron	µg/L	376,000	19,700	**180**	NR
Lead	µg/L	99.7	61.0	**48**	NR
Magnesium	µg/L	15,500	13,100	17	NR
Manganese	µg/L	3,600	1,870	**63**	NR
Mercury	µg/L	1.7	1.1	**42**	NR
Nickel	µg/L	169	122	NA	47
Potassium	µg/L	4,370	3,670	NA	700
Selenium	µg/L	15.3	7.9B*	NA	7.4
Silver	µg/L	1.9B*	3.8B*	NA	1.9
Sodium	µg/L	15,000	14,200	5	NR
Vanadium	µg/L	105	67.6	NA	37.4
Zinc	µg/L	237	177	NA	**60**

NOTE: NR = Not required; analyte concentration was greater than 5X the CRDL and, therefore, the RPD was applied.
NA = Not applicable; analyte concentration was less than 5X the CRDL.
B* = Analyte concentration is between the IDL and the CRDL.
Dashes (---) indicate this column does not apply to organic analysis.
Results in bold indicate an exceedance of the precision requirements.

All precision requirements were met for the field duplicate analyses with the following exceptions: aluminum, cobalt, iron, lead, manganese, mercury, and zinc. The concentrations of these compounds (aluminum, cobalt, iron, lead, manganese, mercury, and zinc) should be considered estimations of the true concentrations in Sample SEEP-1 based on the exceedance of precision criteria for field duplicates. All other analyte results in Sample SEEP-1 should be considered to be usable based on the data Reviewer's review of the field duplicates. The lack of precision for this matrix may be indicative of sampling a low flow source.

The following table shows the results of the leachate station sediment sample field duplicate associated with S1LTSD1:

Compounds/Analytes	Units	LT-01	LT-01 DUP	RPD%	Difference
Methylene Chloride	mg/kg	150	160	6	---
1,1-Dichloroethane	mg/kg	57	39	38	---
1,4-Dichlorobenzene	mg/kg	17	(<6U)	**140**	---
1,1,2,2-Tetrachloroethane	mg/kg	(<6U)	57	**180**	---
Acetone	mg/kg	3,300D	160	**198**	---
1,1,2-Trichloroethane	mg/kg	(<6U)	18	**143**	---
2-Butanone	mg/kg	120	(<32U)	**153**	---
Aluminum	mg/kg	909	3,510	**118**	NR
Arsenic	mg/kg	14.2	12.3	NA	1.9
Barium	mg/kg	166	106	44	NR
Beryllium	mg/kg	1.1B*	1.4B*	NA	0.3
Cadmium	mg/kg	(<0.78U)	3.6B*	NA	3.21
Calcium	mg/kg	10,800	13,500	22	NR
Chromium	mg/kg	4.3B*	7.9B*	NA	3.6
Cobalt	mg/kg	86.8	170	NA	83.2
Copper	mg/kg	0.64B*	12.1B*	NA	11.5
Iron	mg/kg	483,000	102,000	**130**	NR
Lead	mg/kg	(<0.82U)	23.2	NA	22.8
Magnesium	mg/kg	687	1,390	**68**	NR
Manganese	mg/kg	3,610	4,320	18	NR
Mercury	mg/kg	0.17	0.56	NA	0.39
Nickel	mg/kg	46.3	56.9	NA	10.6
Potassium	mg/kg	561B*	900	NA	339
Selenium	mg/kg	37.8	5.4B*	NA	32.4
Silver	mg/kg	1.2B*	4.4B*	NA	3.2
Sodium	mg/kg	161	192	NA	31
Thallium	mg/kg	20.8	(<2.08U)	NA	19.8
Vanadium	mg/kg	5.2B*	22.0	NA	16.8
Zinc	mg/kg	102	52.8	NA	49.2

NOTE: U = Not detected. Sample quantitation limits are shown as (<__U).

D = This flag indicates an analysis at a secondary dilution factor.
NR = Not required; analyte concentration was greater than 5X the CRDL and, therefore, the RPD was applied.
B* = Analyte concentration is between the IDL and the CRDL.
NA = Not applicable; analyte concentration was less than 5X the CRDL.
Results in bold indicate an exceedance of the precision requirements.
Dashes (---) indicate this column does not apply to organic analysis.

The field duplicate precision requirements were met for all analytes with the following exceptions: 1,4-dichlorobenzene, 1,1,2,2-tetrachloroethane, acetone, 1,1,2-trichloroethane, 2-botanone, aluminum, iron, and magnesium. The results for acetone, aluminum, iron, and magnesium should be considered estimations of the true concentration in Sample LT-1 due to the lack of precision between field sample duplicates. The exceedance of the RPD criteria for 1,4-dichloroethane, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, and 2-butanone should not be considered to be significant as the concentrations are at or near the IDL where analytical error is expected. All other analytes are usable as reported based on the data Reviewer's review of the precision of the field duplicate. The lack of precision for this matrix may be indicative of sampling a sediment with high moisture content due to a low flow source which penetrates the

soil. All leachate samples most likely imitate the type of precision indicated by the field duplicate for LT-1 and should be considered rough estimates of the actual given concentrations of analytes at any one given time.

The following table shows the field duplicate sample results associated with the Eastern Plume monitoring well samples.

The first set of field duplicate sample results from the samples associated with SDG EPMW001 (MW-230A and MW-230A DUP) had no detected analytes (analyzed for volatile organic analytes only as per the scope of work) for organics and, therefore, met all precision requirements. The analytical results for MW-230A are usable as reported based on review of the field duplicate precision.

The following table shows the second set of field duplicate sample results associated with the samples from SDG EPMW001:

Compounds	Units	MW-311	MW-311 DUP	RPD%
1,1,1-Trichloroethane	µg/L	3,000D	3,400D	0
Total 1,2-Dichloroethene	µg/L	11	11	0
Methylene Chloride	µg/L	3B	3B	14
Trichloroethene	µg/L	780D	900D	5
Tetrachloroethene	µg/L	20	19	17
1,1-Dichloroethene	µg/L	380D	450D	4
1,1-Dichloroethane	µg/L	70	73	0
1,1,2-Trichloroethane	µg/L	4	4	0
Chloroform	µg/L	2	2	0
Benzene	µg/L	2	2	0
1,2-Dichloroethane	µg/L	9	9	0

NOTE: D = This flag indicates an analysis at a secondary dilution factor.

All precision requirements were met for the field duplicate analyses; the results are usable as reported.

The following table shows the first set of field duplicate sample results from the samples associated with SDG EPMW016:

Compounds	Units	MW-1104	MW-1104 DUP	RPD%
1,1,1-Trichloroethane	µg/L	1	2	**67**
Methylene Chloride	µg/L	2B	2B	0
Total xylenes	µg/L	0.9J	7	**154**
Ethylbenzene	µg/L	(<1U)	1	**67**

NOTE: B = Compound detected in associated method blank.
J = Estimated concentration below detection limit.
U = Not detected. Sample quantitation limits are shown as (<__U).
Results in bold indicate an exceedance of the precision requirements.

The exceedance of the RPD criteria for 1,1,1-trichloroethane, total xylenes, and ethylbenzene should not be considered to be significant as the concentrations are at or near the IDL where analytical error is expected. The data user should note that the results for methylene chloride should be considered false-positive due to method blank contamination and, therefore, the precision criteria would not apply. All other analytical results are usable (see Section B.6 for discussion) as reported for Sample MW-1104 based on review of the field duplicate data.

The following table shows the second set of field duplicate sample results from the samples associated with SDG EPMW016:

Compounds	Units	MW-332	MW-332 DUP	RPD%
1,1,1-Trichloroethane	µg/L	92	96	4
Methylene Chloride	µg/L	0.6JB	0.8JB	29
Trichloroethene	µg/L	25	26	4
1,1-Dichloroethene	µg/L	8	8	0
1,1-Dichloroethane	µg/L	1	0.9J	11

NOTE: J = Estimated concentration below detection limit.
B = Compound detected in associated method blank.

All precision requirements were met for the field duplicate analyses; the results are usable as reported. The data user should note that the results for methylene chloride should be considered false-positive due to method blank contamination (see Section B.6 for discussion) and, therefore, the precision criteria would not apply.

The following table shows the field duplicate sample results associated with the treatment plant samples from SDG EPRI001:

Compounds	Units	Combine Effluent	Combine Effluent DUP	RPD%
1,1-Dichloroethane	µg/L	3	2	**40**
1,1-Dichloroethene	µg/L	0.6J	(<1U)	**91**
1,1,1-Trichloroethane	µg/L	300D	340D	13
Trichloroethane	µg/L	2B	(<1U)	**120**
Methylene Chloride	µg/L	1B	0.9JB	11
Acetone	µg/L	4J	(<5U)	**46**

NOTE: J = Estimated concentration below detection limit.
U = Not detected. Sample quantitation limits are shown as (<__U).
D = This flag indicates an analysis at a secondary dilution factor.
B = Compound detected in associated method blank.
Results in bold indicate an exceedance of the precision requirements.

All precision requirements were met for the field duplicate analyses with the exception of 1,1-dichloroethane, 1,1-dichloroethene, trichlorethane, and acetone. The exceedance of the RPD criteria for 1,1-dichloroethane, 1,1-dichloroethene, and acetone should not be considered to be significant as the concentrations are at or near the IDL where analytical error is expected. The data user should note that the results for methylene chloride and trichloroethane should be considered false-positive due to method blank contamination (see Section B.6 for discussion) and, therefore, the precision criteria would not apply. The analytical results for the Combined Effluent are usable as reported based on the review of the field duplicate precision.

The first set of field duplicate sample results from the samples associated with the direct-push data (DP-EP-02 [33-37 ft] and DP-EP-02 [33-37 ft] DUP) had no detected analytes (analyzed for volatile organic analytes only as per the scope of work) for organics and, therefore, met all precision requirements. The analytical results for DP-EP-02 (33-37 ft) are usable as reported based on review of the field duplicate precision.

The following table shows the second set of field duplicate sample results from the direct-push samples:

Compound	Units	DP-EP-02 (33-37 ft)	DP-EP-02 (33-37 ft) DUP	RPD%
1,1-Dichloroethane	µg/L	(<5U)	2J	22
Methylene chloride	µg/L	3J	(<5U)	18
NOTE: U = Not detected. Sample quantitation limits are shown as (<___U).				
J = Estimated concentration below detection limit.				

All precision requirements were met for the field duplicate analyses; the results are usable as reported.

B.8 METHOD DETECTION LIMITS FOR SOLID AND AQUEOUS SAMPLES

Appendix B.1 provides the method detection limits for solid and aqueous samples. The method detection limit represents the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample for a given matrix.

Appendix B.1

Method Detection Limits for Solid and Aqueous Samples

Date: [redacted] 9:08:03 AM

Matrix: WATER

Compound List: 8260B 5ML PURGE

5970-I

[redacted] Katahdin Analytical Services
MDL Study

Dates of Analysis	Spike	Data Files
JAN 14,1998	1 UG/L	I0639- I0646
JAN 21,1998	2 UG/L	I0708- I0714
FEB 04,1998	5 UG/L	I0814- I0820

Analyst: JCG

Reviewed and Approved by: JA Date: 020598

File:

Compound	Spike	I0639	I0640	I0641	I0642	I0643	I0644	I0646	AVG	STD DEV	MDL
1,1,1,2-TETRACHLOROETHANE	1.00	1.15	0.89	1.14	1.10	1.18	0.99	1.13	1.08	0.10	0.33
1,1,1-TRICHLOROETHANE	1.00	1.07	1.08	1.15	1.12	1.19	1.00	0.65	1.04	0.18	0.57
1,1,2,2-TETRACHLOROETHANE	2.00	2.67	2.48	2.24	2.46	2.28	2.36	2.62	2.44	0.16	0.51
1,1,2-TRICHLOROETHANE	1.00	1.14	1.22	1.18	1.06	1.08	0.96	1.18	1.12	0.09	0.28
1,1-DICHLOROETHANE	1.00	1.14	1.23	1.30	1.28	1.30	1.42	0.54	1.17	0.29	0.92
1,1-DICHLOROETHENE	1.00	0.82	0.57	0.98	0.92	1.00	1.00	1.10	0.91	0.17	0.55
1,1-DICHLOROPROPENE	1.00	1.25	0.51	1.09	1.17	1.38	0.98	1.00	1.05	0.28	0.87
1,2,3-TRICHLOROBENZENE	1.00	1.16	0.97	1.30	1.48	1.70	0.90	1.54	1.29	0.30	0.94
1,2,3-TRICHLOROPROPANE	2.00	2.63	2.43	2.22	1.96	2.38	2.29	2.26	2.31	0.21	0.65
1,2,4-TRICHLOROBENZENE	1.00	1.12	1.07	1.15	1.23	1.63	0.87	1.58	1.24	0.28	0.87
1,2,4-TRIMETHYLBENZENE	1.00	1.06	1.02	1.24	1.05	1.38	0.98	1.15	1.13	0.14	0.45
1,2-DIBROMO-3-CHLOROPROPANE	2.00	1.94	2.37	2.60	2.31	2.60	2.07	2.41	2.33	0.25	0.78
1,2-DIBROMOETHANE	1.00	1.07	1.05	1.17	1.13	0.85	1.21	0.80	1.04	0.16	0.49
1,2-DICHLOROBENZENE	1.00	1.14	1.08	1.30	1.03	1.44	1.17	1.35	1.22	0.15	0.47
1,2-DICHLOROETHANE	1.00	1.30	0.79	1.10	1.18	1.22	1.44	1.21	1.18	0.20	0.63
1,2-DICHLOROETHENE (CIS)	1.00	1.08	0.73	1.01	1.10	0.98	0.89	0.57	0.91	0.20	0.61
1,2-DICHLOROETHENE (TRANS)	1.00	1.19	0.75	1.00	1.22	1.36	1.18	1.13	1.12	0.19	0.61
1,2-DICHLOROPROPANE	1.00	1.58	1.49	1.31	1.49	1.48	1.37	1.21	1.42	0.13	0.40
1,3,5-TRICHLOROBENZENE	2.00	1.98	2.08	2.16	2.15	1.98	1.92	1.85	2.02	0.12	0.37
1,3,5-TRIMETHYLBENZENE	1.00	1.14	0.99	1.14	1.05	1.37	0.98	1.12	1.11	0.13	0.41
1,3-DICHLOROBENZENE	1.00	1.24	1.05	1.24	1.08	1.39	1.07	1.45	1.22	0.16	0.50
1,3-DICHLOROPROPANE	1.00	1.14	1.13	1.19	0.98	1.10	1.06	1.22	1.12	0.08	0.25
1,4-DICHLOROBENZENE	1.00	1.31	1.33	1.38	1.24	1.64	1.33	1.68	1.42	0.17	0.54
2,2-DICHLOROPROPANE	2.00	1.50	1.69	1.48	1.37	1.44	1.36	1.52	1.48	0.11	0.35
2-BUTANONE	5.00	7.40	7.34	5.58	5.58	6.92	5.70	6.43	6.42	0.82	2.56
2-CHLOROETHYLVINYLETHER	1.00	1.10	0.73	0.65	0.79	0.96	0.93	0.66	0.83	0.17	0.53
2-CHLOROTOLUENE	1.00	1.36	0.77	1.28	1.02	1.49	1.14	1.18	1.18	0.24	0.74
2-HEXANONE	2.00	3.30	3.00	3.62	3.09	2.64	2.84	3.30	3.11	0.33	1.03
4-CHLOROTOLUENE	1.00	1.11	1.03	1.27	1.35	1.38	1.33	1.23	1.24	0.13	0.41
4-METHYL-2-PENTANONE	1.00	2.18	1.68	1.73	1.63	1.88	1.31	1.38	1.68	0.29	0.93
ACETONE	5.00	9.37	6.91	6.67	6.37	7.83	6.22	6.02	7.06	1.18	3.71
ACROLEIN	5.00	7.51	8.21	7.74	7.79	10.37	10.99	9.54	8.88	1.41	4.43
ACRYLONITRILE	5.00	6.34	5.91	6.21	5.79	6.86	6.00	5.78	6.13	0.38	1.21
BENZENE	1.00	1.17	1.07	1.21	1.06	1.20	1.10	1.04	1.12	0.07	0.22

Date: 1/15/98 9:08:03 AM

Matrix: WATER

Compound List: 8260B 5ML PURGE

5970-I

Katahdin Analytical Services
MDL Study

Dates of Analysis	Spike	Data Files
JAN 14,1998	1 UG/L	I0639- I0646
JAN 21,1998	2 UG/L	I0708- I0714
FEB 04,1998	5 UG/L	I0814- I0820

Analyst: JCG

Reviewed and Approved by: JA Date: 020598

File:

Compound	Spike	I0639	I0640	I0641	I0642	I0643	I0644	I0646	AVG	STD DEV	MDL
BROMOBENZENE	1.00	0.97	0.93	1.21	0.97	1.34	1.23	1.07	1.10	0.16	0.50
BROMOCHLOROMETHANE	1.00	1.04	0.54	0.74	0.87	1.03	0.60	1.09	0.84	0.22	0.70
BROMODICHLOROMETHANE	1.00	1.20	0.52	1.11	1.10	1.15	1.16	1.27	1.07	0.25	0.79
BROMOFORM	1.00	1.03	1.02	1.07	0.91	1.02	1.21	1.18	1.06	0.10	0.32
BROMOMETHANE	1.00	1.20	0.86	1.06	0.93	1.05	1.21	1.02	1.05	0.13	0.40
CARBON DISULFIDE	1.00	1.20	1.17	1.01	1.22	1.34	1.22	1.04	1.17	0.11	0.36
CARBON TETRACHLORIDE	1.00	1.16	0.99	1.18	1.04	1.24	1.22	1.15	1.14	0.09	0.29
CHLOROBENZENE	1.00	1.01	1.05	1.10	1.04	1.20	1.07	1.15	1.09	0.07	0.21
CHLOROETHANE	1.00	1.46	1.13	0.87	0.65	0.89	0.94	1.21	1.02	0.27	0.84
CHLOROFORM	1.00	1.20	0.63	1.15	1.04	1.11	0.57	0.78	0.93	0.26	0.82
CHLOROMETHANE	2.00	2.67	1.97	2.55	2.41	2.05	2.35	1.58	2.23	0.38	1.19
CIS-1,3-DICHLOROPROPENE	1.00	1.22	1.01	1.30	1.02	1.00	1.08	1.08	1.10	0.12	0.36
DIBROMOCHLOROMETHANE	1.00	1.01	1.05	1.04	0.97	1.02	1.01	1.05	1.02	0.03	0.09
DIBROMOMETHANE	1.00	1.12	1.04	1.15	1.11	1.24	1.23	1.20	1.16	0.07	0.23
DICHLORODIFLUOROMETHANE	2.00	1.71	1.82	1.91	1.64	1.37	1.47	1.94	1.69	0.22	0.68
ETHYL METHACRYLATE	1.00	1.38	1.37	1.22	1.32	1.19	1.14	1.23	1.26	0.09	0.29
ETHYLBENZENE	1.00	1.20	1.12	1.12	1.22	1.36	1.15	1.24	1.20	0.08	0.27
FREON-113	2.00	1.62	1.63	1.57	1.56	1.37	1.32	1.54	1.52	0.12	0.38
HEXACHLOROBUTADIENE	1.00	1.11	1.01	1.36	1.30	1.78	1.11	1.65	1.33	0.29	0.91
ISOPROPYLBENZENE	1.00	1.06	1.00	1.14	1.02	1.27	0.97	1.04	1.07	0.10	0.32
M+P-XYLENE	2.00	2.24	2.21	2.36	1.94	2.94	2.30	2.27	2.32	0.30	0.95
METHYLENE CHLORIDE	2.00	3.47	4.40	4.38	4.27	4.21	3.88	4.53	4.16	0.37	1.16
MTBE	1.00	1.30	1.06	1.26	1.27	1.14	1.23	1.22	1.21	0.08	0.26
N-BUTYLBENZENE	1.00	1.07	0.95	1.23	1.13	1.55	0.93	1.23	1.16	0.21	0.66
N-PROPYLBENZENE	1.00	1.05	1.02	0.97	1.14	1.35	0.98	1.15	1.09	0.13	0.42
NAPHTHALENE	2.00	1.63	1.75	1.77	1.76	1.67	1.57	1.75	1.70	0.08	0.24
O-XYLENE	1.00	1.08	0.92	1.12	0.88	1.27	1.05	1.12	1.06	0.13	0.41
P-ISOPROPYLTOLUENE	1.00	1.05	0.82	1.11	1.02	1.34	0.51	1.13	1.00	0.26	0.83
SEC-BUTYLBENZENE	1.00	0.99	1.07	1.16	1.02	1.40	0.96	1.25	1.12	0.16	0.50
STYRENE	1.00	1.12	0.86	1.04	0.95	1.35	1.03	1.13	1.07	0.16	0.49
TERT-BUTYLBENZENE	1.00	0.95	0.94	1.09	1.01	1.23	0.96	0.98	1.02	0.10	0.33
TETRACHLOROETHENE	1.00	1.05	0.79	1.12	1.12	1.50	1.05	1.15	1.11	0.21	0.66
TETRAHYDROFURAN	5.00	7.94	5.51	7.32	7.56	7.89	7.52	7.24	7.28	0.82	2.59
TOLUENE	1.00	1.22	1.09	1.12	1.09	0.98	1.13	1.06	1.10	0.07	0.23

Date: [redacted] 9:08:03 AM

Matrix: WATER

Compound List: 8260B 5ML PURGE

5970-I

Katahdin Analytical Services
MDL Study

Dates of Analysis	Spike	Data Files
JAN 14,1998	1 UG/L	I0639- I0646
JAN 21,1998	2 UG/L	I0708- I0714
FEB 04,1998	5 UG/L	I0814- I0820

Analyst: JCG

Reviewed and Approved by: JB Date: 020598

File:

Compound	Spike	I0639	I0640	I0641	I0642	I0643	I0644	I0646	AVG	STD DEV	MDL
TRANS-1,3-DICHLOROPROPENE	1.00	1.31	1.05	1.07	1.06	0.99	1.08	0.96	1.07	0.11	0.36
TRICHLOROETHENE	1.00	1.24	0.93	1.07	1.14	1.26	1.24	1.11	1.14	0.12	0.37
TRICHLOROFLUOROMETHANE	1.00	1.22	0.56	1.26	1.31	1.30	1.35	1.36	1.19	0.28	0.89
VINYL ACETATE	5.00	5.02	5.09	5.30	5.25	4.36	4.08	4.31	4.77	0.51	1.59
VINYL CHLORIDE	1.00	1.20	1.02	1.18	1.03	1.61	1.26	0.80	1.16	0.25	0.79

Date: 10/14/98 11:21:06 AM

Matrix: SOIL

Compound List: 8260 APPIX.

Instrument: 5972-S

Katahdin Analytical Servic s
MDL Study

Dates of Analysis	Spike	Data Files
101098	5	

Analyst: JSS

Reviewed and Approved by: Date:

File: S1A9SMDL

Compound	Spike	S1509	S1510	S1511	S1512	S1513	S1514	S1516	AVG	STD DEV	MDL
1,1,1,2-TETRACHLOROETHANE	5PPB	3.99	3.97	4.19	3.89	4.16	4.57	4.53	4.19	0.27	0.85
1,1,1-TRICHLOROETHANE	5PPB	4.46	4.17	4.55	4.15	4.39	4.57	4.69	4.43	0.20	0.64
1,1,2,2-TETRACHLOROETHANE	5PPB	4.24	3.86	4.47	4.24	4.85	5.16	4.84	4.52	0.45	1.41
1,1,2-TRICHLOROETHANE	5PPB	4.63	4.36	4.47	4.19	5.02	4.91	4.76	4.62	0.30	0.94
1,1-DICHLOROETHANE	5PPB	4.81	4.56	4.72	4.51	4.84	5.21	5.08	4.82	0.26	0.81
1,1-DICHLOROETHENE	5PPB	4.25	4.01	4.11	4.00	4.25	4.43	4.24	4.18	0.15	0.48
1,2,3-TRICHLOROPROPANE	5PPB	5.08	4.69	4.49	4.06	5.44	5.22	5.17	4.88	0.49	1.53
1,2-DIBROMO-3-CHLOROPROPANE	5PPB	3.45	3.15	3.31	4.09	3.00	3.81	4.67	3.64	0.59	1.85
1,2-DIBROMOETHANE	5PPB	4.18	3.83	4.08	4.01	4.19	4.54	4.14	4.14	0.22	0.68
1,2-DICHLOROETHANE	5PPB	4.78	4.25	4.38	4.13	4.58	4.85	4.82	4.54	0.29	0.92
1,2-DICHLOROETHENE (TRANS)	5PPB	4.24	4.00	4.09	3.98	4.24	4.41	4.23	4.17	0.15	0.48
1,2-DICHLOROPROPANE	5PPB	4.26	4.16	4.58	4.10	4.50	4.76	4.65	4.43	0.26	0.81
1,4-DIOXANE	200PPB	33.07	32.61	44.88	31.23	59.76	8.61	39.37	35.65	15.53	48.81
2-BUTANONE	5PPB	4.89	4.90	4.57	4.63	4.89	5.21	4.19	4.75	0.32	1.02
2-CHLOROETHYLVINYLETHER	5PPB	2.61	2.62	3.01	2.68	2.23	2.84	2.71	2.67	0.24	0.75
2-HEXANONE	5PPB	3.67	3.93	2.91	3.30	3.88	3.73	3.48	3.56	0.36	1.13
4-METHYL-2-PENTANONE	5PPB	6.16	5.54	6.09	5.56	6.01	6.45	6.01	5.97	0.33	1.02
ACETONE	5PPB	7.42	7.07	7.44	7.07	8.69	8.80	7.90	7.77	0.72	2.27
ACETONITRILE	100PPB	66.66	74.34	74.27	69.98	81.68	86.61	87.22	77.25	8.05	25.31
ACROLEIN	5PPB	8.06	6.87	7.94	8.47	4.51	8.94	5.05	7.12	1.72	5.42
ACRYLONITRILE	5PPB	5.82	5.10	4.24	4.18	4.05	4.62	4.34	4.62	0.63	1.99
ALLYL CHLORIDE	5PPB	4.86	4.60	5.32	4.96	5.60	5.12	5.55	5.14	0.37	1.16
BENZENE	5PPB	4.37	4.18	4.38	4.03	4.39	4.55	4.45	4.34	0.17	0.55
BROMODICHLOROMETHANE	5PPB	4.42	3.98	4.55	4.11	4.49	4.88	4.74	4.45	0.32	1.01
BROMOFORM	5PPB	3.58	3.45	3.62	3.54	4.35	4.31	4.52	3.91	0.46	1.44
BROMOMETHANE	5PPB	5.18	4.84	5.25	4.81	5.77	5.36	6.70	5.42	0.65	2.05
CARBON DISULFIDE	5PPB	5.22	4.94	5.17	4.77	5.01	5.35	5.28	5.11	0.21	0.65
CARBON TETRACHLORIDE	5PPB	4.55	4.08	4.48	4.11	4.41	4.85	4.60	4.44	0.27	0.86
CHLOROBENZENE	5PPB	4.34	4.06	4.29	4.11	4.31	4.55	4.41	4.30	0.17	0.53
CHLOROETHANE	5PPB	5.33	5.11	5.24	4.82	5.22	5.55	5.76	5.29	0.30	0.95
CHLOROFORM	5PPB	4.98	4.70	5.09	5.12	5.37	5.83	5.54	5.23	0.38	1.18
CHLOROMETHANE	5PPB	4.65	4.59	4.72	4.27	4.61	5.03	4.85	4.67	0.24	0.74
CHLOROPRENE	5PPB	3.68	3.60	3.52	3.37	3.48	3.87	3.60	3.59	0.16	0.50
CIS-1,3-DICHLOROPROPENE	5PPB	3.82	3.86	3.94	[illegible]	3.96	3.86	4.04	3.85	0.18	0.57

Date: 10/14/98 11:21:06 AM

Matrix: SO[redacted]

Compound List: 8260 APPIX.

Instrument: 5972-S

[redacted]tahdin Analytical Services
[redacted]DL Study

Dates f Analysis	Spike	Data Files
101098	5	

Analyst: JSS

Reviewed and Approved by:

Date:

File: S1A9SMDL

Compound	Spike	S1509	S1510	S1511	S1512	S1513	S1514	S1516	AVG	STD DEV	MDL
DIBROMOCHLOROMETHANE	5PPB	3.98	4.22	4.49	3.92	4.46	4.71	4.69	4.35	0.32	1.01
DIBROMOMETHANE	5PPB	4.48	4.18	4.39	4.21	4.58	4.62	4.77	4.46	0.22	0.68
DICHLORODIFLUOROMETHANE	5PPB	6.39	5.87	6.14	5.46	6.02	6.67	6.44	6.14	0.40	1.27
ETHYL METHACRYLATE	5PPB	2.96	3.44	3.40	3.09	3.59	3.87	3.54	3.41	0.31	0.97
ETHYLBENZENE	5PPB	3.62	3.45	3.51	3.28	3.39	3.58	3.67	3.50	0.14	0.43
ISOBUTYL ALCOHOL	200PPB	37.24	46.55	44.62	41.63	45.51	45.60	38.79	42.85	3.67	11.54
M+P-XYLENE	5PPB	6.89	6.59	6.85	6.55	6.86	7.49	6.77	6.86	0.31	0.97
METHACRYLONITRILE	100PPB	52.87	50.08	50.44	48.62	55.42	56.07	54.48	52.57	2.90	9.11
METHYL IODIDE	5PPB	4.60	4.27	4.94	4.12	4.66	4.88	4.74	4.60	0.30	0.96
METHYL METHACRYLATE	5PPB	5.25	4.90	5.26	4.91	4.99	5.80	4.65	5.11	0.37	1.17
METHYLENE CHLORIDE	5PPB	7.61	8.29	8.08	6.69	6.92	8.32	8.32	7.75	0.69	2.18
O-XYLENE	5PPB	3.15	3.19	3.12	2.84	3.05	3.20	2.83	3.05	0.16	0.50
PENTACHLOROETHANE	5PPB	4.58	4.94	4.59	4.94	3.67	4.19	5.46	4.62	0.58	1.81
PROPIONITRILE	100PPB	48.28	47.24	50.93	46.42	55.80	60.26	55.37	52.04	5.21	16.37
STYRENE	5PPB	3.27	3.14	3.18	3.01	2.90	3.46	3.17	3.16	0.18	0.56
TETRACHLOROETHENE	5PPB	4.02	3.60	4.14	3.36	4.33	4.38	4.01	3.98	0.37	1.18
TOLUENE	5PPB	4.29	3.98	4.44	4.11	4.23	4.46	4.36	4.27	0.18	0.55
TRANS-1,3-DICHLOROPROPENE	5PPB	3.62	4.46	4.46	4.05	4.50	4.74	4.56	4.34	0.38	1.19
TRANS-1,4-DICHLORO-2-BUTENE	5PPB	3.16	2.58	2.17	3.56	1.54	1.45	1.56	2.29	0.84	2.65
TRICHLOROETHENE	5PPB	4.34	3.91	4.21	3.75	4.26	4.48	4.20	4.16	0.25	0.79
TRICHLOROFLUOROMETHANE	5PPB	5.16	4.69	5.04	4.72	4.90	5.32	5.13	4.99	0.23	0.74
VINYL ACETATE	5PPB	4.14	3.83	3.76	3.70	3.43	4.01	3.92	3.83	0.23	0.72
VINYL CHLORIDE	5PPB	4.83	4.66	4.77	4.56	4.76	5.02	5.03	4.80	0.17	0.55

Katahdin Analytical Services, Inc.
Metals Section
Instrument Detection Limits - 4th Quarter 1998

ELEMENT	IDL (ug/L)	INSTRUMENT	METHOD
Aluminum	23.02	TJA Trace	ICP
Antimony	2.05	TJA Trace	ICP
Arsenic	1.81	TJA Trace	ICP
Barium	0.14	TJA Trace	ICP
Beryllium	0.18	TJA Trace	ICP
Boron	1.00	TJA Trace	ICP
Cadmium	0.19	TJA Trace	ICP
Calcium	7.86	TJA Trace	ICP
Chromium	0.46	TJA Trace	ICP
Cobalt	0.44	TJA Trace	ICP
Copper	0.64	TJA Trace	ICP
Iron	10.46	TJA Trace	ICP
Lead	0.91	TJA Trace	ICP
Magnesium	5.39	TJA Trace	ICP
Manganese	0.13	TJA Trace	ICP
Mercury	0.030	Leeman	CVAA
Molybdenum	0.98	TJA Trace	ICP
Nickel	0.76	TJA Trace	ICP
Potassium	326.14	TJA 61	ICP
Selenium	1.92	TJA Trace	ICP
Silicon	27.51	TJA 61	ICP
Silver	0.99	TJA Trace	ICP
Sodium	17.14	TJA 61	ICP
Strontium	0.03	TJA Trace	ICP
Thallium	4.50	TJA Trace	ICP
Tin	2.07	TJA Trace	ICP
Titanium	0.24	TJA Trace	ICP
Vanadium	0.63	TJA Trace	ICP
Zinc	0.32	TJA Trace	ICP

Method Detection Limit Study

Method:	6010B	**Matrix:**	AQUEOUS
Sample Prep. Method:	3010A	**Sample Weight or Volume:**	N.A.
Analyst:	EAM	**Spike Conc. and Amount:**	VARIOUS
Date:	1/15/98		
Instrument I.D.:	TJA Trace ICP		

Contaminant	Test Conc. (ug/L)	MDL Replicates (ug/L)							Mean Conc. (ug/L)	Standard Deviation (ug/L)	Calculated MDL (ug/L)	Reporting Limit (ug/L)
		1	2	3	4	5	6	7				
Aluminum	60	90.29	84.55	56.07	88.57	80.24	85.14	84.08	81.28	11.58	36.39	100
Antimony	6	6.46	6.65	6.41	6.04	5.54	6.62	6.81	6.36	0.44	1.37	8
Arsenic	6	5.33	5.3	6.56	5.67	6.38	5.89	6.8	5.99	0.60	1.88	8
Barium	0.4	2.23	2.16	2.32	1.34	1.93	2.72	2.57	2.18	0.45	1.43	5
Beryllium	0.5	0.48	0.41	0.54	0.49	0.59	0.56	0.5	0.51	0.06	0.19	5
Boron	3	9.39	9.69	7.44	7.53	6.11	14.91	7.17	8.89	2.94	9.23	100
Cadmium	0.6	0.76	0.71	0.79	0.78	0.65	0.74	0.78	0.74	0.05	0.16	10
Calcium	20	35.41	28.94	34.7	38.67	36.15	34.29	44.9	36.15	4.85	15.24	50
Chromium	1.5	1.9	1.69	1.71	2.01	1.82	1.64	1.88	1.81	0.13	0.42	15
Cobalt	1.5	1.25	1.43	1.19	1.71	1.35	1.28	1.73	1.42	0.22	0.69	30
Copper	1.5	1.84	1.59	1.7	2.01	2.55	1.66	2.21	1.94	0.35	1.09	25
Iron	30	48.03	40.7	41.65	47.84	46.17	40.23	38.74	43.34	3.89	12.23	25
Lead	3	4.02	3.87	3.91	3.67	3.84	4.17	4.84	4.05	0.38	1.20	5
Magnesium	15	24.48	18.42	19.13	20.22	20.4	17.41	21.1	20.17	2.28	7.17	50
Manganese	0.4	0.63	0.55	0.55	0.69	0.71	0.59	0.71	0.63	0.07	0.22	5
Molybdenum	3	3.38	3.28	2.13	3.14	3.07	3.16	3.18	3.05	0.42	1.31	100
Nickel	2	2.63	2.22	2.51	2.66	2.79	2.01	2.6	2.49	0.28	0.86	40

Method Detection Limit Study

Method:	6010B	**Matrix:**	AQUEOUS
Sample Prep. Method:	3010A	**Sample Weight or Volume:**	N.A.
Analyst:	EAM	**Spike Conc. and Amount:**	VARIOUS
Date:	1/15/98		
Instrument I.D.:	TJA Trace ICP		

Contaminant	Test Conc. (ug/L)	MDL Replicates (ug/L)							Mean Conc. (ug/L)	Standard Deviation (ug/L)	Calculated MDL (ug/L)	Reporting Limit (ug/L)
		1	2	3	4	5	6	7				
Selenium	6	7.34	6.36	6.26	6.6	6.68	7.28	6.71	6.75	0.42	1.31	10
Silver	3	1.98	2.55	2.57	2.66	2.79	2.56	2.67	2.54	0.26	0.82	15
Strontium	0.1	0.12	0.11	0.12	0.14	0.12	0.12	0.15	0.13	0.01	0.04	100
Thallium	10	8.63	10.17	11.38	10.23	10.66	11.18	10.63	10.41	0.90	2.84	15
Tin	6	5.35	5.79	5.26	5.9	6.24	7.11	5.98	5.95	0.62	1.94	100
Titanium	0.8	1.13	1.01	1.17	0.97	0.99	1.03	1.11	1.06	0.08	0.24	15
Vanadium	2	2.34	2.04	2.32	2.15	2.13	2.3	2.41	2.24	0.13	0.42	25
Zinc	1	3.84	3.31	4.23	4.84	5.34	5.6	5.97	4.73	0.98	3.07	25

Method Detection Limit Study

Method:	6010B	**Matrix:**	AQUEOUS
Sample Prep. Method:	3010A	**Sample Weight or Volume:**	N.A.
Analyst:	EAM	**Spike Conc. and Amount:**	VARIOUS
Date:	1/16/98		
Instrument I.D.:	TJA 61 ICP		

Contaminant	Test Conc. (ug/L)	MDL Replicates (ug/L)							Mean Conc. (ug/L)	Standard Deviation (ug/L)	Calculated MDL (ug/L)	Reporting Limit (ug/L)
		1	2	3	4	5	6	7				
Aluminum	40	55.78	49.58	58.84	52.62	54.76	55.49	49.4	53.78	3.46	10.86	100
Barium	1.5	4.97	4.99	3.87	3.12	4.03	3.09	5.47	4.22	0.95	2.97	5
Beryllium	0.6	0.74	0.86	0.81	0.79	0.86	0.81	0.76	0.80	0.05	0.14	5
Calcium	50	58.08	50.09	58.84	56.81	50.67	48.74	54.28	53.93	4.12	12.96	50
Chromium	8	8.99	7.98	9.2	9.09	10.24	8.47	8.06	8.86	0.78	2.45	15
Cobalt	8	9.14	8.43	8.95	9.7	9.46	8.7	7.51	8.84	0.73	2.29	30
Copper	5	5.07	4.24	6.58	4.09	5.28	4.62	2.78	4.67	1.17	3.69	25
Iron	10	21.12	23.02	26.44	21.53	22.73	21.89	29.27	23.71	3.02	9.48	25
Magnesium	40	50.07	46.87	46.98	49.06	43.1	43.61	41.81	45.93	3.14	9.88	50
Manganese	3	3.58	3.43	3.91	3.62	3.41	3.41	3.18	3.51	0.23	0.72	5
Nickel	25	33.14	30.62	29.15	31.43	29.07	28.14	30.32	30.27	1.68	5.28	40
Potassium	1200	1127.3	1075.5	1215.7	1251.8	1239.7	1100.2	820.61	1118.69	148.83	467.78	1000
Silicon	50	133.3	88.99	128.9	89.57	80.76	76.44	100.2	99.74	22.73	71.43	200
Silver	10	10.66	9	10.6	9.75	10.32	9.64	8.78	9.82	0.75	2.35	15
Sodium	50	121.23	114.83	134.48	109.3	104.43	123.21	113.59	117.30	9.96	31.30	100
Vanadium	8	8.55	9.81	8.51	9.87	10.38	8.55	9.01	9.24	0.77	2.42	25
Zinc	4	7.01	6.21	8.98	6.82	6.36	7.95	9.4	7.53	1.27	3.99	25

KATAHDIN ANALYTICAL SERVICES, INC. - METALS ANALYSIS SECTION

Method Detection Limit Study

Analysis Method: 7470A
Prep. Method: 7470A
Analyst: GFB
Date: 09/19/98
Instrument I.D.: Leeman PS200

Matrix: Aqueous
Sample Weight or Volume: N.A.
Spike Conc. and Amount: 0.080 ug/L

ANALYTE	TEST CONC. (ug/L)	MDL REPLICATES (ug/L)							MEAN CONC. (ug/L)	STANDARD DEVIATION (ug/L)	CALC. MDL (ug/L)	REPORTING LIMIT (ug/L)
		1	2	3	4	5	6	7				
Mercury	0.080	0.054	0.062	0.066	0.059	0.061	0.071	0.062	0.0621	0.0053	0.0168	0.20

KATAHDIN ANALYTICAL SERVICES, INC. - ELEMENTS SECTION

ICP Method Det ction Limit (MDL) Study in Sand Matrix - Methods 3050A/6010A

Instrument: Thermo Jarrell Ash Trace ICP
Acid Matrix: 5% HCl, 1% HNO3

ELEMENT	Aluminum		Antimony		Arsenic		Barium		Beryllium	
Meth d No.	6010		6010		6010		6010		6010	
Linear Range										
Analysis Date	01/16/98		01/16/98		01/16/98		01/16/98		01/16/98	
Prep. Diluti n Fctr. (DF)	1	1	1	1	1	1	1	1	1	1
Standard True Value	60.00	0	6.00	0	6.00	0	0.40	0	0.50	0
MEASURED CONC.										
Replicate # 1	710.92	528.27	6.10	1.02	4.91	0.13	6.33	4.33	0.58	0.05
Replicate # 2	811.66	548.9	4.60	-0.58	4.07	-1.11	2.96	1.92	0.48	0.05
Replicate # 3	600.30	528.34	4.60	-0.26	3.69	-1.36	2.18	3.66	0.56	0.15
Replicate # 4	700.63	462.3	15.76	-0.85	5.67	-0.67	2.37	2.29	0.47	0.03
Replicate # 5	1182.80	1101	5.48	0.41	4.66	-0.84	5.51	8.51	0.56	0.18
Replicate # 6	1066.10	707.99	4.75	0.83	5.31	-0.46	4.58	7.01	0.51	0.06
Replicate # 7	566.01	429.05	4.09	-0.12	4.43	-1.38	3.32	2.15	0.53	0.11
Replicate # 8										
Replicate # 9										
Replicate #10										
Mean	805.489	615.121	6.483	0.064	4.677	-0.813	3.893	4.267	0.527	0.090
Recovery (%)	317.3%	N.A.	107.0%	N.A.	91.5%	N.A.	-93.6%	N.A.	87.4%	N.A.
Standard Deviation (SD)	234.418	231.711	4.144	0.708	0.689	0.539	1.606	2.575	0.042	0.057
Degrees of Freedom	6	6	6	6	6	6	6	6	6	6
Student's T-value (t)	3.143	3.143	3.143	3.143	3.143	3.143	3.143	3.143	3.143	3.143
MDL(txSDxDF)	***736.776***	***728.267***	***13.025***	***2.226***	***2.164***	***1.694***	***5.048***	***8.095***	***0.133***	***0.181***

KATAHDIN ANALYTICAL SERVICES, INC. - ELEMENTS SECTION

ICP Method Detection Limit (MDL) Study in Sand Matrix - Methods 3050A/6010A

Instrument: Thermo Jarrell Ash Trace ICP
Acid Matrix: 5% HCl, 1% HNO3

ELEMENT	Boron		Cadmium		Calcium		Chromium		Cobalt	
Method No.	6010		6010		6010		6010		6010	
Linear Range										
Analysis Date	01/16/98		01/16/98		01/16/98		01/16/98		01/16/98	
Prep. Diluti n Fctr. (DF)	1	1	1	1	1	1	1	1	1	1
Standard True Value	3.00	0	0.60	0	20.00	0	1.50	0	1.50	0
MEASURED CONC.										
Replicate # 1	5.85	2.32	0.72	0.08	711.17	623.72	3.58	1.64	1.06	-0.33
Replicate # 2	6.86	2.28	0.71	0.03	684.27	544.62	4.08	1.23	0.98	-0.63
Replicate # 3	7.66	0.72	0.73	0.13	603.90	576.11	3.15	2.27	0.68	-0.54
Replicate # 4	5.07	2.29	0.63	0	684.19	523.25	4.51	1.79	0.78	-0.4
Replicate # 5	9.40	4.62	0.76	0.08	1088.30	1008.6	4.20	2.74	1.01	-0.34
Replicate # 6	6.04	1.89	0.77	0.06	907.85	745.76	3.54	1.64	1.08	-0.54
Replicate # 7	4.43	0.65	0.67	0.13	542.75	544.57	4.33	1.11	0.75	-0.63
Replicate # 8										
Replicate # 9										
Replicate #10										
Mean	6.473	2.110	0.713	0.073	746.061	652.376	3.913	1.774	0.906	-0.487
Recovery (%)	145.4%	N.A.	106.7%	N.A.	468.4%	N.A.	142.6%	N.A.	92.9%	N.A.
Standard Deviation (SD)	1.676	1.324	0.049	0.048	188.729	174.242	0.495	0.570	0.164	0.129
Degrees of Freedom	6	6	6	6	6	6	6	6	6	6
Student's T-value (t)	3.143	3.143	3.143	3.143	3.143	3.143	3.143	3.143	3.143	3.143
MDL(txSDxDF)	***5.266***	***4.161***	***0.155***	***0.152***	***593.175***	***547.641***	***1.557***	***1.793***	***0.516***	***0.406***

KATAHDIN ANALYTICAL SERVICES, INC. - ELEMENTS SECTION

ICP Method Det ction Limit (MDL) Study in Sand Matrix - M thods 3050A/6010A

Instrument: Thermo Jarrell Ash Trace ICP
Acid Matrix: 5% HCl, 1% HNO3

ELEMENT	Copper		Iron		Lead		Magnesium		Manganese	
Method N .	6010		6010		6010		6010		6010	
Linear Range										
Analysis Date	01/16/98		01/16/98		01/16/98		01/16/98		01/16/98	
Prep. Diluti n Fctr. (DF)	1	1	1	1	1	1	1	1	1	1
Standard True Value	1.50	0	30.00	0	3.00	0	15.00	0	0.40	0
MEASURED CONC.										
Replicate # 1	3.35	1.78	853.28	690.55	5.87	1.12	157.10	125.55	48.88	43.29
Replicate # 2	2.95	1.51	787.13	645.19	4.54	1.58	172.80	121.91	38.11	35.64
Replicate # 3	3.17	2.94	714.53	743.63	4.65	2.18	145.59	131.4	37.56	38.14
Replicate # 4	3.05	2.05	856.58	529.57	6.11	1.3	146.46	113.29	45.13	28.7
Replicate # 5	3.63	2.44	1314.00	1355.4	4.77	7.73	259.80	249.92	78.51	79.88
Replicate # 6	2.85	1.56	1079.40	980.68	4.35	1.64	210.85	165.27	59.49	60.74
Replicate # 7	3.10	2.42	664.17	483.74	5.20	1.77	130.15	97.12	34.02	26.39
Replicate # 8										
Replicate # 9										
Replicate #10										
M an	3.157	2.100	895.584	775.537	5.070	2.474	174.679	143.494	48.814	44.683
Recovery (%)	70.5%	N.A.	400.2%	N.A.	86.5%	N.A.	207.9%	N.A.	1032.9%	N.A.
Standard Deviation (SD)	0.262	0.527	227.401	302.545	0.684	2.342	45.629	51.312	15.650	19.206
Degrees of Freedom	6	6	6	6	6	6	6	6	6	6
Student's T-value (t)	3.143	3.143	3.143	3.143	3.143	3.143	3.143	3.143	3.143	3.143
MDL(txSDxDF)	***0.825***	***1.657***	***714.720***	***950.899***	***2.149***	***7.361***	***143.411***	***161.274***	***49.187***	***60.365***

KATAHDIN ANALYTICAL SERVICES, INC. - ELEMENTS SECTION

ICP Method Det ction Limit (MDL) Study in Sand Matrix - Methods 3050A/6010A

Instrument: Thermo Jarrell Ash Trace ICP
Acid Matrix: 5% HCl, 1% HNO3

ELEMENT	Molybdenum		Nickel		Potassium		Selenium		Silicon	
Meth d No.	6010		6010		6010		6010		6010	
Linear Range										
Analysis Date	01/16/98		01/16/98				01/16/98			
Prep. Diluti n Fctr. (DF)	1	1	1	1	1	1	1	1	1	1
Standard True Value	3.00	0	2.00	0	1.00	0	6.00	0	1.00	0
MEASURED CONC.										
Replicate # 1	4.30	1.14	3.20	1.25			6.31	0.12		
Replicate # 2	3.46	0.55	3.15	1.03			6.60	0.45		
Replicate # 3	3.23	0.43	3.39	1.38			6.40	0.96		
Replicate # 4	3.52	0.43	3.25	1.25			5.36	1.51		
R plicate # 5	3.16	0.62	3.83	1.62			6.39	1.25		
Replicate # 6	3.15	0.73	3.33	1.25			4.07	0.41		
Replicate # 7	3.11	-0.03	3.40	1.43			6.37	2.13		
Replicate # 8										
Replicate # 9										
Replicate #10										
M an	3.419	0.553	3.364	1.316	#DIV/0!	#DIV/0!	5.929	0.976	#DIV/0!	#DIV/0!
Recovery (%)	95.5%	N.A.	102.4%	N.A.	#DIV/0!	N.A.	82.5%	N.A.	#DIV/0!	N.A.
Standard Deviation (SD)	0.420	0.354	0.226	0.185	#DIV/0!	#DIV/0!	0.913	0.710	#DIV/0!	#DIV/0!
Degrees of Freedom	6	6	6	6	-1	-1	6	6	-1	-1
Student's T-value (t)	3.143	3.143	3.143	3.143	ERR	ERR	3.143	3.143	ERR	ERR
MDL(txSDxDF)	***1.320***	***1.112***	***0.710***	***0.580***	***#DIV/0!***	***#DIV/0!***	***2.870***	***2.231***	***#DIV/0!***	***#DIV/0!***

KATAHDIN ANALYTICAL SERVICES, INC. - ELEMENTS SECTION

ICP Method Det ction Limit (MDL) Study in Sand Matrix - Methods 3050A/6010A

Instrument: Thermo Jarrell Ash Trace ICP
Acid Matrix: 5% HCl, 1% HNO3

ELEMENT	Silver		Sodium		Strontium		Thallium		Tin	
Method No.	6010		6010		6010		6010		6010	
Lin ar Range										
Analysis Date	01/16/98				01/16/98		01/16/98		01/16/98	
Prep. Diluti n Fctr. (DF)	1	1	1	1	1	1	1	1	1	1
Standard True Value	3.00	0		0	0.10	0	10.00	0	6.00	0
MEASURED CONC.										
Replicate # 1	2.92	-0.01			2.28	1.6	8.42	-4.6	28.38	21.94
Replicate # 2	2.57	-0.13			2.14	1.5	6.54	-3.29	27.68	20.89
Replicate # 3	2.72	0.28			1.67	1.53	2.04	-5.51	26.61	22.67
Replicate # 4	2.59	-0.03			2.01	1.35	5.23	-3.5	27.08	21.43
Replicate # 5	2.76	0.1			3.20	3.13	5.16	-5.79	28.05	19.99
Replicate # 6	2.60	-0.14			3.09	1.91	6.32	-3.38	26.71	21.38
Replicate # 7	3.98	-0.3			1.67	1.31	4.72	-3.38	26.55	20.51
Replicate # 8										
Replicate # 9										
Replicate #10										
Mean	2.877	-0.033	#DIV/0!	#DIV/0!	2.294	1.761	5.490	-4.207	27.294	21.259
R covery (%)	97.0%	N.A.	#DIV/0!	N.A.	532.9%	N.A.	97.0%	N.A.	100.6%	N.A.
Standard Deviation (SD)	0.502	0.186	#DIV/0!	#DIV/0!	0.624	0.635	1.960	1.085	0.743	0.895
Degre s of Freedom	6	6	-1	-1	6	6	6	6	6	6
Student's T-value (t)	3.143	3.143	ERR	ERR	3.143	3.143	3.143	3.143	3.143	3.143
MDL(txSDxDF)	***1.577***	***0.586***	***#DIV/0!***	***#DIV/0!***	***1.962***	***1.994***	***6.160***	***3.411***	***2.334***	***2.813***

KATAHDIN ANALYTICAL SERVICES, INC. - ELEMENTS SECTION

ICP Method D t ction Limit (MDL) Study in Sand Matrix - Methods 3050A/6010A

Instrument: Th rmo Jarrell Ash Trace ICP
Acid Matrix: 5% HCl, 1% HNO3

ELEMENT	Titanium		Vanadium		Zinc					
Method N .	6010		6010		6010		6010		6010	
Linear Range										
Analysis Date	01/16/98		01/16/98		01/16/98					
Prep. Dilution Fctr. (DF)	1	1	1	1	1	1	1	1	1	1
Standard True Value	0.80	0	2.00	0	1.00	0		0		0
MEASURED CONC.										
Replicate # 1	487.30	432.39	3.74	1.36	3.14	1.15				
Replicate # 2	340.31	321.04	4.05	0.98	3.01	1.49				
Replicate # 3	379.56	378.97	3.34	1.5	2.01	3.45				
Replicate # 4	474.85	322.64	3.77	1.27	4.39	2.16				
Replicate # 5	538.16	535.47	5.01	2.83	12.56	4.05				
Replicate # 6	437.67	496.45	4.21	1.85	3.54	3.12				
Replicate # 7	343.06	366.16	3.61	1.07	3.73	1.78				
Replicate # 8										
Replicate # 9										
Replicate #10										
Mean	428.701	407.589	3.961	1.551	4.626	2.457	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Recovery (%)	2639.1%	N.A.	120.5%	N.A.	216.9%	N.A.	#DIV/0!	N.A.	#DIV/0!	N.A.
Standard Deviation (SD)	76.581	83.773	0.542	0.633	3.574	1.092	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Degrees of Freedom	6	6	6	6	6	6	-1	-1	-1	-1
Student's T-value (t)	3.143	3.143	3.143	3.143	3.143	3.143	ERR	ERR	ERR	ERR
MDL(txSDxDF)	***240.693***	***263.298***	***1.704***	***1.988***	***11.234***	***3.432***	***#DIV/0!***	***#DIV/0!***	***#DIV/0!***	***#DIV/0!***

KATAHDIN ANALYTICAL SERVICES, INC. - METALS ANALYSIS SECTION

Method Detection Limit Study

Analysis Method: 7471A
Prep. Method: 7471A
Analyst: DPD
Date: 01/07/98
Instrument I.D.: Leeman PS200

Matrix: Soil
Sample Weight or Volume: 0.60 g
Spike Conc. and Amount: 0.080 ug/L

ANALYTE	TEST CONC. (ug/L)	MDL REPLICATES (ug/L)							MEAN CONC. (ug/L)	STANDARD DEVIATION (ug/L)	CALC. MDL (ug/L)	REPORTING LIMIT (ug/L)
		1	2	3	4	5	6	7				
Mercury	0.080	0.080	0.072	0.083	0.082	0.066	0.058	0.074	0.0736	0.0092	0.0288	0.20